

CHAPTER 20: PERFORMANCE EVALUATION AND ACTIVE PORTFOLIO MANAGEMENT

4. a.

| | <u>E(r)</u> | <u>σ</u> | <u>β</u> |
|-----------------|-------------|----------------------------|---------------------------|
| Stock A | 11% | 10% | 0.8 |
| Stock B | 14% | 31% | 1.5 |
| Market index | 12% | 20% | 1.0 |
| Risk-free asset | 6% | 0% | 0.0 |

The alphas for the two stocks are:

$$\alpha_A = 11\% - [6\% + 0.8(12\% - 6\%)] = 0.2\%, \quad \alpha_B = 14\% - [6\% + 1.5(12\% - 6\%)] = -1.0\%$$

Ideally, you would want to take a long position in Stock A and a short position in Stock B.

b. If you hold only one of the two stocks, then the Sharpe measure is the appropriate criterion:

$$S_A = \frac{11 - 6}{10} = 0.5, \quad S_B = \frac{14 - 6}{31} = 0.26$$

Therefore, using the Sharpe criterion, Stock A is preferred.

5. We first distinguish between timing ability and selection ability. The intercept of the scatter diagram is a measure of stock selection ability. If the manager tends to have a positive excess return even when the market's performance is merely "neutral" (i.e., the market has zero excess return) then we conclude that the manager has, on average, made good stock picks. In other words, stock selection must be the source of the positive excess returns.

Timing ability is indicated by the curvature of the plotted line. Lines that become steeper as you move to the right of the graph show good timing ability. The steeper slope shows that the manager maintained higher portfolio sensitivity to market swings (i.e., a higher beta) in periods when the market performed well. This ability to choose more market-sensitive securities in anticipation of market upturns is the essence of good timing. In contrast, a declining slope as you move to the right indicates that the portfolio was more sensitive to the market when the market performed poorly, and less sensitive to the market when the market performed well. This indicates poor timing.

We can therefore classify performance ability for the four managers as follows:

| | <u>Selection Ability</u> | <u>Timing Ability</u> |
|---|--------------------------|-----------------------|
| A | Bad | Good |
| B | Good | Good |
| C | Good | Bad |
| D | Bad | Bad |

6. a. Actual: $(0.70 \times 2.0\%) + (0.20 \times 1.0\%) + (0.10 \times 0.5\%) = 1.65\%$

Bogey: $(0.60 \times 2.5\%) + (0.30 \times 1.2\%) + (0.10 \times 0.5\%) = 1.91\%$

Underperformance = $1.91\% - 1.65\% = 0.26\%$

b. *Security Selection:*

| <u>Market</u> | <u>Portfolio Performance</u> | <u>Index Performance</u> | <u>Excess Performance</u> | <u>Manager's Portfolio Weight</u> | <u>Contribution</u> |
|-------------------------------------|------------------------------|--------------------------|---------------------------|-----------------------------------|---------------------|
| Equity | 2.0% | 2.5% | -0.5% | 0.70 | -0.35% |
| Bonds | 1.0% | 1.2% | -0.2% | 0.20 | -0.04% |
| Cash | 0.5% | 0.5% | 0.0% | 0.10 | <u>0.00%</u> |
| Contribution of security selection: | | | | | -0.39% |

c. *Asset Allocation:*

| <u>Market</u> | <u>Actual Weight</u> | <u>Benchmark Weight</u> | <u>Excess Weight</u> | <u>Index Return minus Bogey</u> | <u>Contribution</u> |
|-----------------------------------|----------------------|-------------------------|----------------------|---------------------------------|---------------------|
| Equity | 0.70 | 0.60 | 0.10 | 0.59% | 0.059% |
| Bonds | 0.20 | 0.30 | -0.10 | -0.71% | 0.071% |
| Cash | 0.10 | 0.10 | 0.00 | -1.41% | <u>0.000%</u> |
| Contribution of asset allocation: | | | | | 0.130% |

Summary

| | |
|-------------------------|--------------|
| Security selection | -0.39% |
| <u>Asset allocation</u> | <u>0.13%</u> |
| Excess performance | -0.26% |

8. It does, to some degree. If those manager groups are sufficiently homogeneous with respect to style, then relative performance is a decent benchmark. However, one would like to be able to adjust for the additional variation in style or risk choice that remains among managers in any comparison group. In addition, investors might prefer an "investable" alternative such as a passive index to which they can compare a manager's performance. After all, passive investors do not have the choice of investing in "the median manager," since the identity of that manager is not known until *after* the investment period.

9. The manager's alpha is: $10\% - [6\% + 0.5(14\% - 6\%)] = 0$

10. a. $\alpha_A = 24\% - [12\% + 1.0(21\% - 12\%)] = 3.0\%$

$\alpha_B = 30\% - [12\% + 1.5(21\% - 12\%)] = 4.5\%$

$T_A = (24 - 12)/1 = 12, \quad T_B = (30 - 12)/1.5 = 12$

As an addition to a passive diversified portfolio, both A and B are candidates because they both have positive alphas.

- b. (i) The managers may have been trying to time the market. In that case, the SCL of the portfolios may be non-linear.
- (ii) One year of data is too small a sample.
- (iii) The portfolios may have significantly different levels of diversification. If both have the same risk-adjusted return, the less diversified portfolio has a higher exposure to risk because of its higher diversifiable risk. Since the above measure adjusts for systematic risk only, it does not tell the entire story.