PERFORMANCE EVALUATION

Fall 2002
**Basic Idea.** Compare performance of active manager with passive manager with same risk and subject to same constraints.

**Example 1:**

Assume manager is larger stock picker. Then relevant comparison might be her performance relative to S&P index.

**Example 2:**

Assume manager is a market timer holds bonds and moves between long and short term bonds according to his beliefs about interest rate changes. Then relevant comparison might be a portfolio of short and long index in weights equal to average weights of managers choices (e.g. if half the time long and half short weights equal to 1/2).

**Note:** If we believe we have appropriate equilibrium model and if we believe we have efficient markets can compare versus equilibrium model.
Two groups need to evaluate and they have different information sets:

(1) Plan sponsor

(2) Individual investors

Plan sponsors can:

(1) Specify with managers the appropriate benchmark

(2) Require any and all information

Individual investors data set:

(1) Usually limited to returns

(2) Or ratings like morningstar
What are characteristics sensible passive portfolios?

(1) Replicatable indexes

(2) Total return indexes
   a. Dividends or interest included
   b. Splits or stock dividends included

(3) Expenses included (?)
Candidates For Indexes

(A) Stock

(1) S & P
(2) Wilshire
(3) Value or growth indexes

(B) Bond

(4) Shearson Lehman
(5) Solomon
(6) Merril

(C) International

(7) Morgan Stanley (International)
(8) London Times - Actuary (International)
Considerations

(1) Weighting

(2) Frequency

(3) Accuracy

Some Comments

(1) A plan sponsor can generally agree with managers on relevant indexes. They need to since they need to do aggregate asset allocation.

(2) Normal measure is difference in return between active manager and benchmark.

(3) Benchmark can and often will be multiple indexes.

(4) Normal excess return is small
Standard analysis compares against "similar managers."

Some comments:

(1) Hardly similar (risk objectives)

(2) Doesn't answer question should we be active at all
Adjust for risk

**Issue:** assume we agree that relevant population is S&P securities but manager chooses the highest beta stocks from securities in S&P index. Then if market goes up he or she looks good. If this is timing good. If this is selectivity incorrect evaluation

\[
\text{Performance} = R_p - \beta \uparrow R_I
\]

Where this is empirical Beta.

For plan sponsor Betas can be built up from securities, for individual investors must be estimated from return series.
Some serious considerations for individual investors and plan sponsors making comparisons:

(A) Survivorship Bias

(B) Selection Bias
Traditional One Parameter Measures

Sharpe

Equation of Line

\[ \bar{R}_i = R_F + \frac{\bar{R}_A - R_F}{\sigma_A} \sigma_i \]

Sharpe measure is slope

\[ \frac{\bar{R}_A - R_F}{\sigma_A} \]
Sharpe differential return height above line.

\[
\bar{R}_A = R_F + \frac{\bar{R}_m - R_F}{\sigma_m} \sigma_A
\]

\[
\Delta = \bar{R}_i - \bar{R}_A
\]
Treynor-Jenson

Equation of Line

\[ \bar{R}_i = R_F + \frac{\bar{R}_A - R_F}{\beta_A} \beta_i \]

Treynor measure is slope

\[ \frac{\bar{R}_A - R_F}{\beta_A} \]
Jenson is differentiated return

\[ \bar{R}_{A'} = R_F + \frac{\bar{R}_m - R_F}{\beta_A} \]

\[ \Delta = \bar{R}_A - \bar{R}_{A'} \]

\[ = \bar{R}_A - \left( R_F + \beta_A \left( \frac{\bar{R}_m - R_F}{\beta_A} \right) \right) \]
Easy to generalize to multi-index model.

We use four indexes:

1. S&P
2. Small - Large
3. Value - Growth
4. Bond Index

\[ \Delta = R_A - \bar{R}_A \]

where

\[ \bar{R}_A = R_F + \beta_{S&P} \left( R_{S&P} - R_F \right) + \beta_{SL} R_{SL} \]

\[ + \beta_{Vg} R_{Vg} + \beta_B \left( R_B - R_F \right) \]