In order to provide comparative investment results for use in evaluating fund performance, Callan Associates gathers rate of return data, portfolio characteristics, and stated investment strategies and philosophies on over 4,800 actively managed separate account investment products and composites as well as data on over 12,000 mutual funds.

Gathering product and composite data instead of individual separately managed account data ensures that relative differences in investment manager's number of accounts and assets under management do not cause an under or over weighting of any one investment product in our universes. Additionally, by not limiting our universe to organizations that manage money for our plan sponsor clients, we are able to cover a wider range of management firms and thus have a more complete universe of data.

The Callan Associates database universe is structured in such a way as to eliminate "survivorship bias". If a manager is fired by a plan sponsor client for under performance, there is no effect on inclusion in, or exclusion from, any style universes. The investment product or management organization would have to cease to exist entirely in order for it to be automatically dropped from our universes. If this were not the case, there would be a systematic "survivorship bias" as under performing products would be dropped from the style universe only to be replaced by relatively better performing products over time.

Callan does not place all the products and composites it receives data on into "style" groups. We employ broader, asset class-based "database groups" to hold this information for more general performance comparisons, and as a starting point for the more detailed analysis that is employed in the creation and maintenance of style universes. Significantly less than half of the funds we receive data on pass the multiple screens required for inclusion in a style group. This results in styles that are sufficiently specific and "pure" so that their risk/reward profiles and performance cycles are distinct, distinguishable, and relevant.

The method of style analysis used in the construction and maintenance of Callan Style Groups is multifaceted in that it is both quantitative and qualitative in nature, taking advantage of several types of data about a given candidate. During the style analysis process we look at elements of relative risk as well as return behavior, and attempt to verify apparent investment styles with the manager's stated investment philosophy, strategy, and implementation. There are four main analytical steps or "screens" that an investment product goes through as a candidate for inclusion in a style group. These four steps are outlined below.

1) Rolling Periods Performance Correlation - The candidate fund's performance history is compared to the performance history of existing Callan Style Groups, as well as any relevant market indicators, over multiple rolling periods to determine both the degree of performance correlation to a particular investment style or index, as well as the consistency of that correlation. Using enough rolling periods so that the total time period covered contains several non-overlapping subperiods minimizes time period bias while giving a good measure of performance correlation across many types of capital market scenarios and investment style cycles. For a fund to be a legitimate candidate for inclusion in a style group it must have a high correlation over the entire period being analyzed, as well as be more highly correlated to the style in question than any other style over that period. Absolute correlation is not the only important piece of information in this test; the consistency of correlation within all the rolling subperiods is also analyzed. If the manager's performance is the most highly correlated with a particular style across all the different market scenarios, the consistency of his investment style is verified. In short,

this step of the Callan style analysis seeks high absolute correlation with a style, high correlation relative to the correlation with other styles, and consistency in correlation across multiple market scenarios.

2) Relative Risk Comparisons - In addition to performance comparisons, the Callan style analysis takes into account the relative level of risk taken in the making of a portfolio performance record. By analyzing the standard deviation of a funds performance versus the standard deviation of a particular style group's performance, we can ensure that the candidate fund's risk record is consistent with the proposed style group's risk level. This dimension of style analysis is particularly useful in the fixed-income arena where various return correlations across different groups of securities can be accomplished with significantly different levels of volatility. By combining risk analysis with return analysis we ensure that style universes are meaningful in both dimensions.

3) Stated Investment Evaluation - Callan periodically pools thousands of investment managers and their firms through a computerized questionnaire in order to collect detailed information on their organizations, products, and the various investment philosophies, strategies, and methodologies they employ in the management of each distinct investment product. This information is invaluable when analyzed in combination with the other more quantitative data Callan collects, and the results from related steps in the style analysis process. The stated investment philosophies are a good way to verify that the observed performance and risk correlations with a particular style universe are the result of a conscious decision on the manager's part to employ investment strategies normally associated with that management style. Verifying this intent maximizes the likelihood that managers placed in a style will consistently exhibit that particular style of management in the future, thereby benefiting the consistency and "pureness" of the Callan Style Group going forward. This step in the process, along with portfolio characteristic analysis, aids the researcher in distinguishing between styles that may behave similarly with regard to performance, over some time period. By combining these screens we can avoid both "false positives" due to temporarily similar style behaviors, and unintended correlation as a by-product of an intuitively unrelated investment strategy.

4) Portfolio Characteristics - Another step in the Callan style analysis process is the evaluation of the average portfolio characteristics of a fund over time. By examining characteristics such as Price-to-Earnings ratio, Price-to-Book ratio, Dividend Yield, Market Capitalization, Growth-in-Earnings, Beta, R-Squared, and several others, we are able to verify whether a manager is employing the philosophies and strategies that he claims to be using, and whether the resulting portfolio exposures are consistent with the style for which he is a candidate. This type of analysis nicely complements the aforementioned risk comparison and investment strategy evaluations by illustrating the type of portfolio exposures used in the pursuit of performance, as well as the consistency of these exposures over time.

Risk Statistics

The calculation and presentation of risk statistics serves to provide additional insight into the performance of a manager outside of the returns achieved. In capital markets, there are a variety of investment vehicles, each with their own expected return at any given time period and also with an amount of expected risk. Risk ranges from the so-called "risk-free" assets like 90-day US Treasury Bills to ultra-risky speculative derivatives like "super inverse-floaters". A careful consideration of a manager's risk and how it relates to the level of performance achieved is vital for the overall evaluation of a portfolio.

The risk statistics that are calculated by Callan Associates serve two main comparative purposes; the comparison of the manager against the market in which the manager invests in and the comparison of the manager against other managers that have the same investment style.

For comparison against the market, a manager's risk will be evaluated against the risk of a market indicator. By analyzing the results, we can see at what level of risk a manager is operating under as compared to the broader market index, such as the S&P 500 Index. These values will tell the investor the relative risk a portfolio has to swings in the market.

For comparison against other managers, Callan Associates has a universe of risk statistics calculated on the Callan Style Groups. By showing the risk levels of the manager against the range of risk values in a style group, we can see how much risk a manager is taking compared to the managers considered to be similar in investment philosophy and style. With this type of analysis, one can measure the performance return of a manager with an eye on the amount of risk, both absolutely and relatively, the manager took to achieve the returns.

The risk statistics calculated come in three types. Values such as the Annualized Return and the Variance represent total absolute values of risk and return. Values such as Beta and R-Squared show the relative risk of a manager compared to the risk of the market as a whole as represented by the risk of a market indicator. Finally, values such as Alpha and Sharpe Ratio attempt to show the amount of return achieved by a manager per unit risk taken to achieve the return.

Portfolio Characteristics

Callan Associates calculates portfolio characteristics for common stock and fixed-income accounts. These characteristics represent information concerning not only aspects of the firm itself such as the Debt-to-Capital ratio for common stocks or security quality rating for the issuer of a corporate bond but also properties of the securities of the company or bond issuer such as the Price-to-Earnings ratio for common stock or the Average Expected Duration for fixed-income securities.

Analytical Solutions Group

Phone: 415.291.4191 **E-mail: pep@callan.com**
101 California Street, Suite 3500 San Francisco, CA 94111 Fax: 415.291.4018