



WHICH RETURN IS RIGHT FOR YOU? TWR vs. MWR : MANAGEMENT OVERVIEW **WHITE PAPER**

Understanding the importance of performance measurement with regard to input in the selection of asset classes, investment styles and managers.

FIRST RATE : 1903 ASCENSION BLVD. : ARLINGTON, TX 76006 : WWW.FIRSTRATE.COM

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First Rate, Inc.
1903 Ascension Boulevard
Arlington, TX 76006
www.firstrate.com

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Why Measure Performance?

Investors primarily measure performance to monitor progress toward goals. When investors utilize outside managers, performance is analyzed to evaluate manager success or failure. Performance measurement is an important input in the selection of asset classes, investment styles and managers.

Two Primary Measures of Performance

There are two primary performance measures used to monitor progress in investment portfolios. The first measure is a money-weighted return (MWR). The MWR measures the performance of the portfolio and considers the impact of external cash flows. The MWR is an internal rate of return (IRR) which is frequently used for evaluation in financial analysis. The MWR is often referred to as a dollar weighted return (DWR). The portfolio earns the MWR which takes into account the size and timing of cash flows. The MWR computation weights a sub period return's influence in a total period return by the level of investment in the sub period.

The second measure is a time-weighted return (TWR) which is used to measure manager performance by eliminating the impact of external cash flows considered beyond the manager's control. The TWR is the return received by the investor on capital invested at the start of a time horizon without consideration of market value changes due to external flows. A TWR is computed by geometrically linking sub period returns computed between cash flows. Unlike the MWR, the influence of a sub period return on the TWR does not consider the level of market value in the sub period. Thus, the TWR better measures or represents the capital or money market investment returns available across from a time horizon fund or portfolio across sub periods without over or under weighting sub periods. The TWR calculation assumes the reinvestment of income earned in the sub period.

Factors to consider when selecting TWR or MWR

There are several factors to consider when selecting a time weighted return or a money weighted return:

- ❑ What or who is being measured?
- ❑ Degree of manager control
- ❑ Benchmark or goal
- ❑ Special Asset Classes
(cash flow control and liquidity)
- ❑ Computational considerations
- ❑ Sensitivity to environment
(reinvestment rate, return volatility, significant cash flows)
- ❑ Reporting available

What or who is being measured?

It is first important to determine the objective of the performance measurement. Is it to understand how well the portfolio is actually performing versus goals, or is the objective to understand how effectively investment managers are making decisions given their span of control? There is a hierarchy of decisions involved in the investment process such as: asset allocation policy, style policy within an asset class, and security selection within a selected style or product. The decision process may be decentralized using investment committees, consultants or account relationship officers to determine and implement asset class and style policies at one level. Then, the selection of securities would be determined by portfolio managers within a selected style or product. In this situation, the portfolio manager's performance would be measured by the TWR. An argument can also be made to measure the performance of investment committees, consultants or account relationship officers on a MWR basis when these parties are controlling cash flows through strategic rebalancing.

Degree of Manager Control

The decision to measure the portfolio manager on a TWR basis is motivated by the assumption that the manager has little control over external cash flows into the style or product managed. At a high level (such as the total fund level), this may be true but as managers make strategic decisions at the economic sector, industry or security level, the cash flows necessary to implement these decisions are under manager control. A manager could also be responsible for strategic asset allocation shifts in addition to security selection and be more appropriately measured by the MWR than the TWR.

Benchmark or Goal

Manager comparisons are typically made against benchmark indices on a TWR basis. The common index returns are provided as time weighted returns. Current attribution comparisons of performance versus indices are made on a TWR basis. Comparisons of portfolio returns against value based goals (measured in terms of dollars or some other currency) are more directly evaluated on a MWR basis. The MWR directly measures the growth in the terminal wealth of a portfolio.

Special Asset Classes (cash flow control and liquidity)

Some situations where the manager controls cash flows, such as private equity and venture capital, are more properly measured by the MWR according to AIMR guidelines. There are also other investment areas such as real estate where the market is illiquid and valuations are infrequent that should be evaluated on a MWR basis.

Computational Considerations

The TWR is computed by linking period returns geometrically. The period returns are typically MWR estimates using the modified Dietz method. The Dietz method is ordinarily used when the periods are one month or less. The returns can be computed and checked using algebra or linear equations. The MWR returns for extended periods usually are computed more exactly by the iterative solutions of nonlinear equations. Both TWR and MWR computations are easily automated on the computer. While the MWR return may be cumbersome to compute without a computer, results are easily verified or recomputed with computer support.

What or who is being measured?

Sensitivity to Environment

The computation of the MWR is very sensitive to the return environment. The accuracy of efficient computation methods such as the Modified Dietz, decreases as cash flows become more significant and returns become more volatile. The timing assumption for external cash flows during the day can also be important as measurement periods shorten while the flows and returns become more significant. There is also a reinvestment rate assumption that is implicit in the internal rate of return formula that can have a significant impact on the MWR estimate.

Reporting Available

The majority of performance measurement reports developed in current systems utilize TWR and typically just a few reports utilize MWR. However, MWR can be introduced in the format for many of the currently used TWR reports. Reports can also be provided showing both the TWR and the MWR. This may become more important as investment firms' offer managed account programs which emphasize strategic allocations across styles and products.

Attribution

Current attribution methodologies such as Brinson-Fachler explain the difference between the portfolio TWR and an index benchmark over a multi period horizon. There are typically two or three components considered in the attribution. The two components are selection (computed with portfolio sector allocations) and allocation. The three components are pure selection (computed with benchmark sector allocation), allocation and interaction.

The difference between the portfolio MWR and TWR is the external cash flow impact. Although the responsible party for the cash flow decision may range from client to consultant to manager, it is important to recognize this component of attribution when explaining the difference between the MWR (the return the portfolio actually received) and the TWR.

Summary

The difference between the TWR and MWR for a period can be quite wide with significant cash flows and volatile returns. The MWR can be a relevant measurement of the actual portfolio return and can measure the total results of strategic reallocation as well as security selection. The TWR is intended to measure manager returns assuming the manager has no control over external flows to the specific investments being measured. When cash flows are relatively low and returns are fairly stable, the TWR and MWR would be close in value. In many, but not all situations, this is the case.

Committees, consultants, relationship managers, and clients have a major degree of cash flow control through contributions, withdrawals, and policy implementation. This degree of cash flow control may also be available to the investment manager in special cases. In these situations, it would be beneficial to show the MWR and the TWR. When comparisons are made to money level goals, the MWR is more relevant. When comparisons are made to time weighted index returns, the TWR is more relevant.

It is recommended that both TWR and MWR be utilized. The MWR measures how the portfolio actually performed which is important to investment committees, consultants, relationship managers, clients or investors. External cash flows have an impact on portfolio growth and performance and are generally controlled by a party to the investment process although that party may not be the investment manager. There is a benefit to showing the impact of the external flows on performance. Also, since most portfolios have goals that are money denominated, it makes sense to provide the MWR measurement.

Overall, the recommendation is to continue using TWR for manager and total portfolio performance across managers and styles. More use of MWR in reporting is also recommended particularly for understanding the actual growth of the portfolio. The TWR remains important for measuring the effectiveness of managers within a style or product where the manager does not have significant influence on the external flows in and out of the portfolio.