



WEALTH MANAGEMENT, LLC

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FEATURE ARTICLE

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Time-Weighted Return vs. Internal Rate of Return

Overview: This article defines time-weighted return (TWR) and internal rate of return (IRR) and discusses why each is the most appropriate measurement under differing circumstances.

Most investors are probably unaware that different types of return measures yield significantly different results for the same investment. After all, in theory, a return is a return is a return, right? Unfortunately, it is not quite that simple. Two common return measurements used by the investment industry are the TWR and the IRR.

Time-Weighted Return

TWR is the measurement required by the Global Investment Performance Standards published by the CFA Institute. Its distinguishing characteristic is that cash inflows, cash outflows and amounts invested over different time periods have *no* impact on the stated return. In other words, deposits, withdrawals and differences in amounts invested over different time periods have no material effect on the return value.

Internal Rate of Return

The IRR (also referred to as the dollar-weighted return) differs from the TWR in that it calculates the return rate at which the present value of cash outflows equals the present value of cash inflows. Its distinguishing characteristic is that cash inflows, cash outflows and amounts invested over different time periods *do* affect the stated return. In other words, deposits, withdrawals and differences in amounts invested at different time periods do have a material effect on the return rate.

Manual calculation of IRR involves a hit-or-miss process to find the rate of return that will equate the present value of the cash flows by manually substituting different rates of return to find the right answer. Thus, calculating the IRR typically involves the use of a computer or financial calculator.

Applications to Investing

The question for investors: When is it appropriate to use TWR as opposed to IRR and vice versa? Both measures have applications for which we feel it is more appropriate to use one instead of the other. Let's look at some examples of each.

Mutual fund returns are usually reported using the TWR. By doing so, the returns are unaffected by cash outflows or inflows and thus offer a more accurate representation of how the underlying securities within the mutual fund performed, regardless of the timing of investor cash flows. This is a figure of obvious concern to the mutual fund manager and the fund company.

Another area where use of the TWR is appropriate is in the calculation of index or benchmark returns. Indexes do not have cash flows from investors. An index simply reflects the performance of a basket of underlying stocks or other investment securities. In this case, the TWR gives an accurate measure of the return achieved by the securities that compose the index or benchmark portfolio.

Alternatively, studies that compare the returns of active versus passive management represent an area where the use of the TWR could skew the results, as the TWR does not reflect the return actually achieved by the average dollar invested. Studies of this type should compare returns using the IRR (or dollar-weighted approach).

That's why mutual fund return calculations using TWR can be misleading. Suppose a mutual fund had assets of only \$25 million at the beginning of 2009 but had assets of \$300 million at the beginning of 2010. The fund achieved holding-period returns of 30 percent in 2009 but only 5 percent in 2010. In this case, because far more dollars were under management in 2010 than in 2009, the IRR would be significantly less than the TWR. The IRR gives a more accurate picture of fund performance, particularly for the average investor dollars in that fund, most of which were not yet invested when the highest returns were being achieved.

In our quarterly investment performance reporting, we show both TWR and IRR. In this case, the TWR gives an indication of how an investor's benchmark portfolio performed while the IRR gives an indication of how the investor actually performed. In a sense, investors can think of the IRR as the personal rate of return they received for their particular investments, since it accounts for the timing of their buy/sell decisions, and/or portfolio withdrawals or deposits that affected the realized return. This gives the investor an indication of what factors were at play that caused the IRR to differ (positively or negatively) from the benchmark rate of return.

Summary

The IRR and TWR are two return measures that are frequently used in investment performance reporting. These measures can yield significantly different results for the same time periods. It is important to understand the difference between the two and under what circumstances each measurement will be of greatest informational value.

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