Evaluating Performance Measurement

Aligning Performance Measurement with Investment Objectives

Introduction

At first glance, the task of measuring investment returns of corporate cash portfolios seems relatively straightforward, since they most typically invest only in "plain vanilla" securities and have limited numbers of transactions. Treasury practitioners, however, often tell a different tale of performance measurement. One frequent complaint involves apples-to-oranges performance comparisons between money managers. Another involves the difficulty of estimating coupon yields. And still others complain about the lack of appropriate benchmarks for buy-and-hold portfolios.

This state of confusion often derives from the fact that there are both apples and oranges in the investment performance world, otherwise known as market value returns and book value returns. While investors often have some understanding of the former since it is the way most stock and bond portfolios are measured, the concept of returns based on adjusted book value is typically known only in such limited circles as money market fund managers, government investment pool investors, and insurance companies. Until one understands the different concepts and their proper applications, meaningful interpretation of performance records can be difficult. This paper attempts to help investors gain a glimpse into the complex world of performance measurement with a brief overview of the two types of return methodologies and their applications to cash portfolios.

Market Value Returns (MVR)

MVR are sometimes called total returns as they measure returns from both the income and principal components of a security. They are also frequently referred to as "marked-to-market" returns as they are computed with the value of investments using prevailing market prices.

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For a single reporting period, the basic MVR calculation formula is: "(End Market Value + Income Earned) / Beginning Market Value." The "modified Dietz" method assigns a time weighting factor to intra-period transactions and removes "noise" created by noninvestment activities. Using a compounded return formula, monthly returns are chain-linked to arrive at quarterly and annual returns.

The CFA Institute establishes and interprets the Global Investment Performance Standards (GIPS). GIPS are standards specifically designed to provide a standardized way investment advisors report composite returns which will allow a perspective

Market Value Returns = (End Market Value + Income Earned) / Beginning Market Value

investor to make an apples-to-apples MVR performance comparison.

MVR are important measures as they provide estimated returns if securities were to be liquidated on the day of measurement, and are the "gold standard" for most investment portfolios. For certain "buy-and-hold" bond portfolios, including certain short-duration accounts, however, this method tends to offer less informational value for income projections.

For certain portfolios, the market value method tends to introduce market volatility and offer less informational value for income projections.

Book Value Returns (BVR)

Instead of "return maximization," corporations frequently cite "preservation of capital" as the first objective when investing their excess cash. Strategies that seek this objective often take a "buy-and-hold" approach with regards to trading activities. These investors intend to derive most, if not all, of their earnings from their bonds' coupon income. BVR performance may be more appropriate for portfolios that fall in this category.

Book Value Returns = (End Book Value + Earned Income)/ Beginning Book Value

The BVR method differs from the MVR method in that it removes the unrealized gains and losses from the calculation. Its basic formula is: "(End Book Value + Earned Income) /Beginning Book Value." Book value is the purchase price of an investment plus/minus the straight-line amortization of its discount/premium from its par value ($100). For example, for a security with one-year maturity bought for $100.12, its book value is $100.11 in one month, and $100.10 in two months, and so on. At maturity, its book value becomes $100, which is the same as its par value. As with MVR, monthly returns are chain-linked to get quarterly and annual returns. A capital gain or loss occurs only when a security is sold prior to maturity at a price other than its adjusted book value.

Several major investment groups employ the book value method for return measurement.

There is wide application of the BVR method in portfolios that require great accuracy in income estimates. Money market funds, stable value funds, government investment pools and insurance portfolios are some of the portfolios that incorporate this method in return measurement.

Benefits of The BVR Method

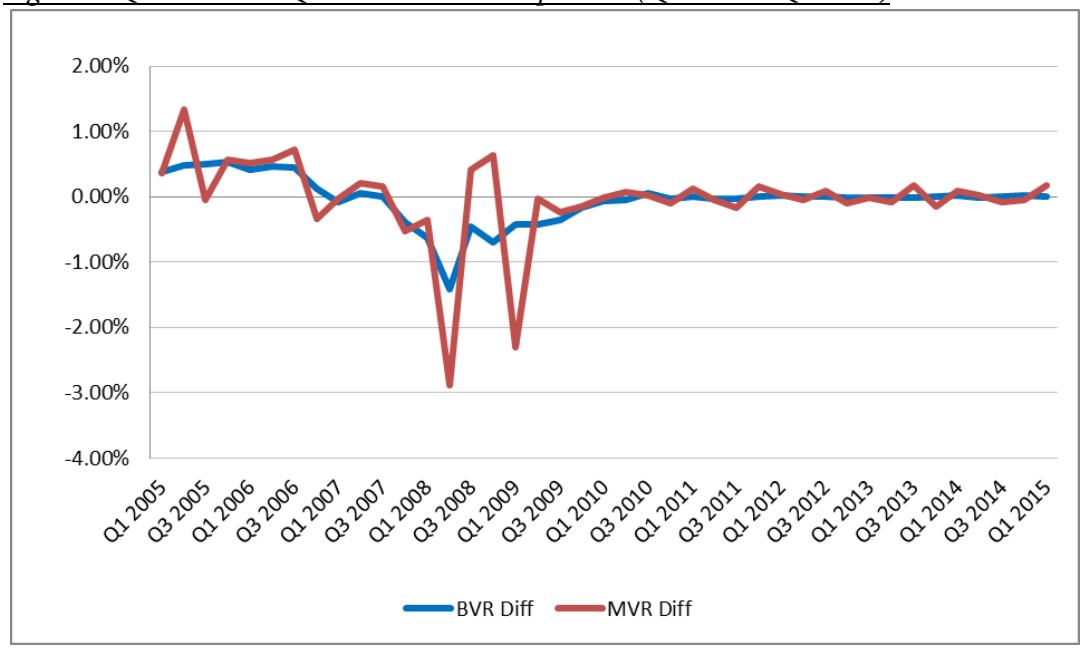
The advantages of reporting performance based on the MVR method have been well publicized. However, the benefits of the BVR method are not as widely known. Depending on individual portfolio characteristics, book value-based performance may provide better informational value to a corporate treasurer than marked-to-market returns.

Less Volatile Returns: Short-duration portfolios with buy-and-hold strategies typically experience little impact from short-term price swings resulting from interest rate

Returns tend to be less volatile and income estimates tend to be more accurate with the book value method.

movements, credit rating changes, or other factors. These accounts typically ride out both the ups and downs of the market to collect maturity proceeds at par value. For these investors, the terminal return potential is decided at the time of purchase. When a portfolio does not benefit from the unrealized gains, nor suffer unrealized losses, returns based on the BVR method tend to present a more realistic and less volatile performance picture.

Figure 1: Quarter-over-Quarter Return Comparison (Q1 2005 – Q1 2015)



Source: Capital Advisors Group, Inc. Data points represent the firm's quarter-over-quarter change of aggregate performance using the BVR and MVR methods for illustrative purposes only. All returns are annualized. Refer to the end of the article for important performance disclosure.

To illustrate the difference in return volatility presented by the two methods, *Figure 1* depicts the quarter-over-quarter changes in aggregate performance at Capital Advisors Group, Inc. since the first quarter of 2005 (performance disclosure at the end of the article). While the BVR change line has a relatively smooth contour for most of the last ten years, the MVR line dropped as much as 2.9% in the second quarter of 2008 and surged by 1.3% in the second quarter of 2005. All returns are expressed as annualized figures.

More Accurate Income Estimates: The BVR method of performance measurement is consistent with the main benefit of buy-and-hold fixed income investing - the predictability of future cash flows. The method is generally very accurate in income projections from investments, while the MVR method does not intend to make such projections. Since income estimates are based on the yield of each security at the time of

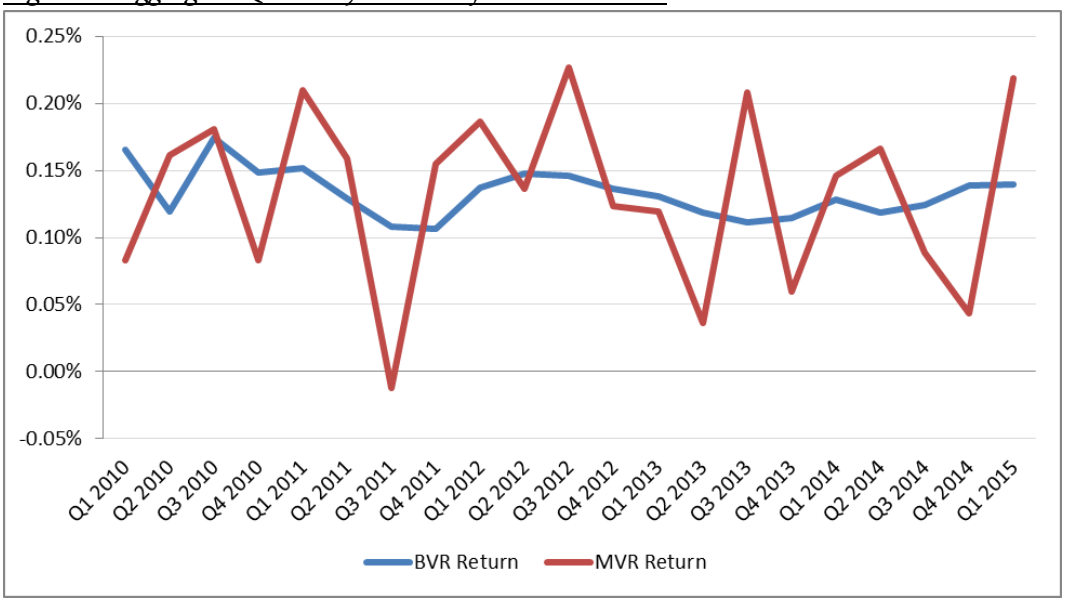
purchase, portfolio yield projections only need to take into consideration reinvestments and new transactions. In fact, the ability to forecast and budget for anticipated income is a main reason for stable value funds and insurance portfolios to use book value returns. For corporate and institutional entities with expenditures funded by income from investment portfolios, BVR can be very helpful.

Limitations of The BVR Method

Decades ago, a larger universe of fixed income portfolios was measured with the BVR performance method. Nowadays, portfolios have moved away from this method and have adopted the MVR method to be consistent with fair value reporting, either voluntarily or by regulatory mandates. Therefore, some of the drawbacks when interpreting portfolio performance using the BVR method are not well-known.

The drawbacks of the book value method include masked portfolio volatility, the impact of historical purchases on current yield, and the lack of comparable benchmarks.

Figure 2: Aggregate Quarterly Return of CAG Accounts



Source: Capital Advisors Group, Inc. Data points represent the firm's quarter-over-quarter change of aggregate performance using the BVR and MVR methods for illustrative purposes only. All returns are annualized. Refer to the end of the article for important performance disclosure.

Masked Portfolio Volatility: Since the BVR method does not consider unrealized gains and losses, it may not be appropriate for securities that are subject to large interest rate risk or credit risk. By using a pre-determined schedule to set the value of securities holdings, the method causes a smoothing effect that masks the true worth of investments at any given time. Investors relying solely on BVR may be blindsided by substantial unrecognized losses in a portfolio, and when selling, may unexpectedly

realize such losses. As a rule of thumb, BVR of securities with one year or less until maturity tend to be more reliable than those with longer maturities. Once maturities move beyond a year, BVR should always be supplemented with MVR.

Figure 2 shows the quarterly aggregate performance of Capital Advisors Group, Inc. over a five-year period and indicates large marked-to-market valuation changes. Although the aggregate return difference between the BVR and the MVR methods was essentially nothing for the last five years, we can see that returns as measured by the BVR method stayed within a tight range whereas the MVR method showed significantly higher volatility, including negative returns in the third quarter of 2011.

Historical Yield: With BVR, the reported portfolio return is a historical figure, since the calculation is based on information at the time of purchase. This is a different concept from a portfolio's current yield to maturity, or expected rate of return from the same securities at today's market rates. A portfolio with securities purchased in a lower interest rate environment tends to report a lower book yield than its yield to maturity. The reverse is also true. For this reason, income projections should be interpreted in an "accounting" context (i.e. for financial statement reporting), not in an "economic" context (i.e. realistic expectations) when assessing the earnings power of a bond portfolio.

Lack of Comparable Benchmarks: in direct contrast to the wide variety of market value indices available, investment managers often construct book value benchmarks in house, an approach which lacks industry standards. Investors frequently use Treasury bill indices as proxies for buy-and-hold benchmarks, even though they are actually market value indices. The London Inter-Bank Offered Rate (LIBOR) series, although qualified as book value benchmarks, does not have third-party index providers that ensure data integrity. The lack of comparable book value benchmarks often leads to incorrect return comparisons.

Application of BVR in Cash Portfolios

Corporate and institutional cash portfolios, with a primary objective of capital preservation and a short-duration portfolio structure, should consider the BVR method.

Buy-and-Hold Mandate: Performance returns using the BVR method are meaningful only for buy-and-hold portfolios. When an investor holds a bond to maturity, the overall return is the same regardless of interim price fluctuations. Investors who employ an active trading strategy should not use the BVR method as bonds are often "traded away" for relative value before their book value is fully amortized.

A buy-and-hold mandate, short-maturity assets, and the need for reliable income estimates are some of the common conditions that make the BVR method appealing for cash portfolios.

Short-Maturity Portfolios: The BVR method is generally well suited for short maturity portfolios. Money market funds, which have a 13-month maximum maturity limit, use the calculation method to determine share prices under most market conditions. Even though life insurance companies use BVR to manage against long-dated book yield targets, such practice is rare on cash portfolios with securities maturing beyond a year as the portfolio's interest risk increases.

Income (Not Return) Forecasting: The ability to accurately forecast future portfolio income is one of the primary considerations in adopting BVR reporting. However, it's important to note that "income" is a different concept from "return", and that earned income estimates are not forecasts of future returns.

Choose Benchmarks Appropriately: A market value index rebalances itself by periodically adding new securities and removing old and ineligible ones. This rebalancing feature disqualifies all market indices as appropriate book value benchmark candidates. Today, Lipper Institutional, iMoneyNet, and Crane Dataproduce some of the most widely recognized BVR benchmarks, as they represents the average of money market portfolios using the amortized cost (book value) method.

Supplement, Not Substitute: It is important to recognize that BVR and MVR are two sides of a coin, and should not be mutually exclusive. A portfolio's long-term rate of return should be the same regardless of the short-term methodological differences. With increased demand for transparency in financial reporting, marking the value of investments to market has become the standard disclosure practice at most corporations. For buy-and-hold portfolios, reporting returns based on book value should not substitute total return performance, and vice versa. It is always a good practice to request and obtain both sets of returns for reporting and analytical purposes.

Book value return and total return are two sides of a coin.

Conclusions

Accurate and useful performance measurement is imperative for effective portfolio management. Book value return and total return are two sides of a coin. A portfolio's long-term rate of return should be the same regardless of which method is used. For buy-and-hold portfolios, reporting returns based on one method does not eliminate the usefulness of the other. Investors need to properly identify these differences and apply the methods appropriately. When it comes to avoiding an apples-to-oranges comparison, the corporate treasurer's correct course of action is to equip herself with both sets of data in order to make an informed decision.

Reporting returns based on book value does not substitute total return performance, and vice versa.

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