

Evaluating Performance Measurement

Aligning Performance Measurement with Investment Objectives

EXECUTIVE SUMMARY:

There are generally two ways of calculating investment returns. Mutual funds, pension plans, and investors with total return objectives predominantly use the market value based method. Money market funds, cash portfolios, insurance accounts and investors seeking income stability tend to rely on book value based returns.

Sometimes, an investor may use a type of return methodology inconsistent with the portfolio's investment goals. Furthermore, complaints about apples-to-oranges return comparisons of different managers often involve a mismatch of the two types of return measurement.

Market value performance measures a portfolio's estimated liquidation value, and it may not be appropriate for certain "buy-and-hold" portfolios as it tends to introduce market volatility and offers less informational value for income projections.

The book value return method removes unrealized gains and losses by using "adjusted book value" in return calculations. This method is based on the predictive nature of a non-defaulted bond's price at maturity; i.e. its par value (\$100).

Book value return may be a preferred performance measurement method for cash portfolios with a primary objective of capital preservation and with a short-duration portfolio structure. Specifically, returns tend to be less volatile and income estimates tend to be more accurate when the book value method is utilized.

Clear identification of investment goals should be a crucial step in performance measurement selection. Without the alignment of performance methodology with investment objectives, return numbers may be of little value.

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 a limited number 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 comes 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

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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 managers, government pooled investors, and insurance companies. Until one understands the different concepts and their proper applications, meaningful interpretation of performance records can be difficult. This research paper attempts to help investors gain a glimpse of the extremely 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.

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 which removes “noise” created by non-investment activities. Using a compounding return formula, monthly returns are chain-linked to arrive at quarterly and annual returns.

The CFA Institute, an investment industry trade group formerly known as the Association for Investment Management and Research (AIMR), establishes and interprets the Global Investment Performance Standards (GIPS) and the AIMR Performance Presentation Standards (AIMR-PPS). The AIMR-PPS are voluntary standards specifically designed to provide a standardized way investment advisors report composite returns which will allow a perspective investor to make an apples-to-apples MVR performance comparison. For additional analysis on this subject, please refer to our appendix article “AIMR-PPS: The “Holy Grail” of Performance Measurement?”

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 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 primary objective when investing their excess cash. Investment strategies that seek this objective often take a “buy-and-hold” approach with regards to security purchases and trading activity. 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.

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. 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

Market Value Returns =
$$\frac{\text{End Market Value} + \text{Income Earned}}{\text{Beginning Market Value}}$$

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

Book Value Returns =
$$\frac{\text{End Book Value} + \text{Earned Income}}{\text{Beginning Book Value}}$$

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

a price other than its adjusted book value.

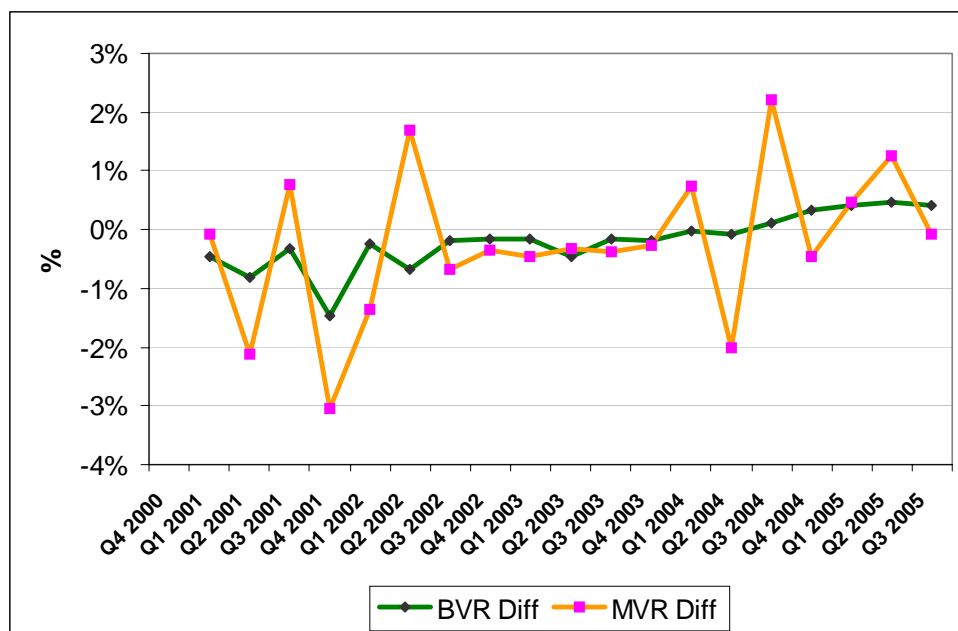
There is wide application of the BVR method in portfolios that require great accuracy in income estimates. Money market funds, stable value funds, government investment pools and insurance portfolios are some of the portfolios that incorporate this method in return measurement.

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 movements, credit rating changes, or other factors. These accounts typically ride out both the up's and down's 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 (Q4 2000 – Q3 2005)



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.

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

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 Groups, Inc. since the fourth quarter of 2000 (Performance disclosure at the end of the article). While the BVR change line has a relatively smooth contour for most of the last five years, the MVR line dropped as much as -3.1% in the fourth quarter of 2001 and then surged by 2.2% in the third quarter of 2004. 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 investment 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.

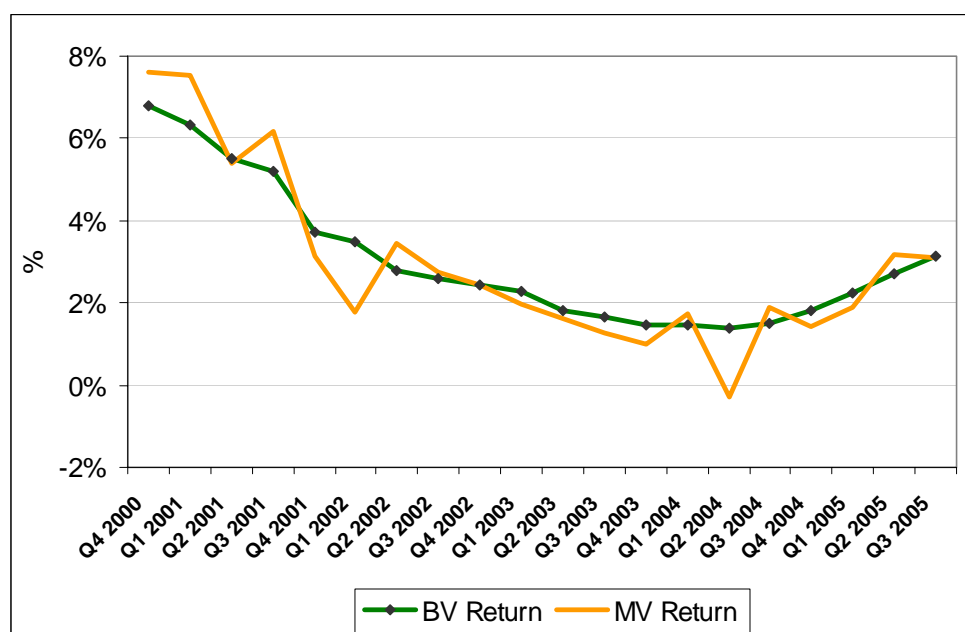
LIMITATIONS OF THE BVR METHOD

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, one needs to be aware of some of the drawbacks when interpreting portfolio performance using the BVR method.

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.

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: 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.

Figure 2 shows the quarterly aggregate performance of Capital Advisors Group, Inc., and indicates large marked-to-market valuation changes. Although the return difference between the BVR and the MVR methods was essentially nothing (a difference of 0.07% annualized) for the last five years, the BVR method does not highlight negative returns in the third quarter of 2004.

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, 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

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

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 maintain share prices at a constant \$1.00 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, the Lipper Institutional and IMoneyNet money market averages are the most widely recognized BVR benchmarks, as they represent 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

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

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

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.

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.

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Performance shown is the time-weighted, adjusted book-value performance for each quarter, taking into account the re-investment of dividends and earnings. Capital Advisors Group believes that book value return is the most relevant performance measure for buy-and-hold portfolios. Book value return is calculated using the amount of interest that has been earned +/- the principal that has been amortized throughout the given period. Accounts have been included in composites on a dollar-weighted basis. Quarterly returns are presented on an annualized basis. Maturity bucket performance represents the average quarterly balance for all cash management accounts within the specified average maturity buckets. Capital Advisors Group's 5-Year performance is based on the arithmetic mean of the corresponding quarters. Historical performance available by calling 617-630-8100.

APPENDIX: AIMR-PPS – The “Holy Grail” of Performance Measurement?

Introduction

The CFA Institute, an investment industry trade group formerly known as the Association for Investment Management and Research (AIMR), establishes and interprets the AIMR Performance Presentation Standards (AIMR-PPS) in North America. In more than a decade since their introduction, an increasing number of investment managers have voluntarily complied with the new standards that promote comparability of performance reporting.

Since 2001, the institute allows firms to claim compliance in advertising materials without showing performance results. In many instances, firms attempt to promote the standards as proxy for better investment practices or ethical conduct. In other cases, confusion arises when claims of compliance imply a different return calculation methodology, or when claims were made on individual accounts instead of on firm-wide composites.

Although the standards have evolved over time, the fundamental intent of the CFA Institute remains intact - to provide a fair representation of a manager's discretionary investment capabilities by avoiding cherry-picking “model”, or “representative” accounts. Since performance measurement is a very important aspect of investment process, we would like to present a few points that may help to better clarify what it means to be AIMR-PPS compliant.

Note: effective in 2006, the institute's Global Investment Performance Standards (GIPS) will replace AIMR-PPS as its global performance presentation standards.

Standards reporting is on the aggregate level

Firms report AIMR compliant data at “composite” levels, not on individual accounts, unless an entire composite consists of a single account. A composite is a group of accounts with similar characteristics. As a practical matter, an account in a composite with strong performance may perform poorly. This is because no two accounts are exactly alike, but every account must be in a composite. For example, if a portfolio with three-month average maturity is included in a “short-duration” composite that consists mostly of one-year average maturity accounts, it will likely have different returns from the composite. Perspective investors should evaluate the dispersion of composite returns, preferably the full distribution of all accounts in a composite, instead of relying on aggregate level returns.

AIMR-PPS are presentation standards, not new methodologies or ethical standards

After drafting the standards in 1987, AIMR had a six-year public commentary period to incorporate established industry practices and ethical standards. The new standards did not represent a different calculation methodology, nor did they suggest better accuracy or higher ethical conduct – they merely standardized them. A tongue-in-cheek industry joke illustrates the point: “Performance presentation standards do not make cheating impossible, they only make sure that everybody is cheating the same way.”

Compliance with the standards is voluntary but retroactive

While presentations compliant with the AIMR-PPS are often preferred, on-going revisions to

the standards and their operational requirement of retroactive compliance place investment managers at various stages of standards implementation. Compliance is not mandatory. Neither the CFA Institute itself, nor regulatory agencies such as the Securities and Exchange Commission (SEC), require managers to comply with the standards at this time. A new manager with no performance history is able to claim standards compliance immediately, while established firms are required to claim retroactive compliance for up to 10 years, including all current and closed accounts. This laborious process is one of the main hindrances for firms with longer track records to claim standards compliance.

Claims should be verified

Investment managers who elect to become compliant may claim compliance after following necessary steps. A "claim" does not provide compliance assurance, since many requirements of the standards can be rigorous and tricky. The CFA Institute does not review, nor verify, the accuracy of a firm's claim. Rather, it established procedures for third parties to verify such claims. When presented with the claim, investors should request from the manager a verification letter prepared by a third party that is knowledgeable about the standards, along with a listing of all of the firm's available composites and disclosure notes.

The AIMR-PPS are total return performance standards

Lastly, the AIMR-PPS apply to calculation and presentation conventions that measure marked-to-market returns, which include unrealized gains and losses. For a variety of investment portfolios, including internal government investment pools, insurance and pension portfolios, that report adjusted book values-based returns, the CFA Institute makes no reference, judgment, or recommendations as to the proper standards to follow. Therefore, these fixed income portfolios with buy-and-hold strategies are generally outside of the realm of the AIMR-PPS.

Conclusion

As popular performance presentation standards, the AIMR-PPS appear in advertising messages with increasing frequency. While promoting comparability of returns among managers, the standards address only a subset of the multi-faceted nature of performance measurement.

As important as adhering to a common set of reporting standards, all investment managers should strive to improve the quality of information presented. Consistent with requesting pertinent performance data, perspective investors should evaluate a manager's long-term investment excellence, which often comes from diligent macro market and credit research, efficient and relative value trading, thoughtful securities selection, and prudent portfolio risk management.

Research Disclosure:

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