

Closed-End Funds | An analysis of the closed-end fund market

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Leverage in Closed-End Funds

A double-edged sword

One characteristic of closed-end funds (CEFs) that separates them from other comparable investment vehicles is the use of leverage, which is when they borrow additional capital or use other instruments in order to gain a magnified exposure to their respective asset classes. One of the primary benefits of magnifying the exposure of a CEF's portfolio's is the ability to enhance the current yield of the CEF. A higher yield, a characteristic that is highly desired among CEF investors, influences demand for the shares of such a CEF and consequently its valuation (premium/discount to net asset value). The use of leverage is fairly common among CEFs. In fact, 70% of all CEFs quote total leverage ratios greater than 10%, and more than half of all CEFs quote total leverage ratios greater than 25% (as of June 24, 2014). Leverage is a double-edged sword: the benefits are accompanied by additional risks.

The impacts of using leverage

Leverage can serve to magnify both gains and losses, thereby increasing volatility. In other words, in rising markets, the use of leverage can serve to enhance the return of a CEF's net asset value (NAV), but in down markets it can serve to exacerbate the NAV's losses compared to an identical unleveraged portfolio. The best way to illustrate the effect that leverage can have on returns, and consequently on volatility, is through a hypothetical example. Suppose we have three CEFs — a non-leveraged, a leveraged and a highly-leveraged version of an identical portfolio. The non-leveraged CEF doesn't borrow any additional capital nor does it magnify its exposure in any way through derivatives; the leveraged CEF borrows additional capital amounting to 33 1/3% of total assets (net assets +

leverage), while the highly-leveraged CEF raises additional capital amounting to 50% of total assets.

As is illustrated in the table on the next page, if we assume a 10% decline in total assets, the NAV for the non-leveraged CEF should decline by the same magnitude as the total assets of the trust. However, the leveraged CEF and the highly-leveraged CEF would experience more disappointing returns of -15% and -20%, respectively. On the other hand, if we assume that total assets increase by 10%, we get the opposite effect — a +10% total return for the non-leveraged CEF, +15% for the leveraged CEF, and +20% for the highly-leveraged CEF. Since a leveraged CEF is gaining exposure to more assets than its investors provided in equity capital, the magnitude of the gains/losses are greater than they would be in the absence of leverage.

Leverage Magnifies Changes in the Underlying Market

10% Market Decline	Unleveraged Trust	Leveraged Trust	Highly-Leveraged Trust
Shares Outstanding	10 million	10 million	10 million
Beginning Net Asset Value (NAV)	\$10.00	\$10.00	\$10.00
Net Assets	\$100 million	\$100 million	\$100 million
Leverage Ratio (Based on Total Assets)	0%	33%	50%
Leverage	\$0	\$50 million	\$100 million
Total Assets (Net Assets + Leverage)	\$100 million	\$150 million	\$200 million
Total Assets After a 10% Market Decline	\$90 million	\$135 million	\$180 million
Less Leverage (Unchanged)	\$0	\$50 million	\$100 million
Net Assets After a 10% Decline	\$90 million	\$85 million	\$80 million
Ending NAV (Net Assets/# of Shares)	\$9.00	\$8.50	\$8.00
Percent NAV Change	-10%	-15%	-20%

10% Market Increase	Unleveraged Trust	Leveraged Trust	Highly-Leveraged Trust
Shares Outstanding	10 million	10 million	10 million
Beginning Net Asset Value (NAV)	\$10.00	\$10.00	\$10.00
Net Assets	\$100 million	\$100 million	\$100 million
Leverage Ratio (Based on Total Assets)	0%	33%	50%
Leverage	\$0	\$50 million	\$100 million
Total Assets (Net Assets + Leverage)	\$100 million	\$150 million	\$200 million
Total Assets After a 10% Market Increase	\$110 million	\$165 million	\$220 million
Less Leverage (Unchanged)	\$0	\$50 million	\$100 million
Net Assets After a 10% Increase	\$110 million	\$115 million	\$120 million
Ending NAV (Net Assets/# of Shares)	\$11.00	\$11.50	\$12.00
Percent NAV Change	10%	15%	20%

The scenarios are hypothetical, and do not intend to represent specific return, yield, or investment, nor are they indicative of future results.

Source: Wells Fargo Advisors

Leverage metrics

The degree to which a CEF uses leverage is usually reported via a leverage ratio that is based on total assets (as opposed to *net* assets). In other words, one could calculate a CEF's leverage ratio by dividing the amount borrowed by the CEF's total assets. For example, if a CEF raises \$100 million in equity and then borrows another \$50 million in order to leverage the portfolio, the leverage ratio is 33 1/3% or:

$$\frac{\$50 \text{ million}}{\$100 \text{ million} + \$50 \text{ million}}$$

Pursuant to the Investment Company Act of 1940 ('40 Act), there is a limit on the degree to which CEFs can leverage their assets, and there are consequences when these limits are trespassed. The maximum leverage ratio depends on how a CEF leverages its assets. Generally, the leverage ratio can't exceed 33 1/3% if debt (e.g., a note or a line of credit) is used, and 50% if preferred stock is issued.

These figures are roughly equivalent to a minimum asset-coverage ratio of 300% for debt, and 200% for preferreds. If a CEF's asset coverage ratio falls below its threshold it will not be allowed to pay distributions to its common shareholders until the ratios comply with the thresholds stipulated by the '40 Act. Eliminating a CEF's distribution, even if only temporary, is not taken lightly by shareholders, as was evidenced by a few highly leveraged CEFs that held asset classes that fell quickly and dramatically in late 2008. Their asset coverage ratios declined too fast for the managers to reduce the amount of leverage in time. Consequently, those few CEFs — not more than a handful — had to temporarily suspend their distributions, and were able to resume paying the distributions (including those distributions that were missed) only after they reduced the amount of leverage so as to comply with the asset coverage rules. It took those CEFs only a few weeks to comply with the asset coverage rules.

Keep in mind that in a few cases, even though the structural leverage ratio is within the statutory

limits, a CEF may potentially use additional non-structural leverage — through derivatives, for example — resulting in an all-in total leverage ratio that exceeds 50%. We believe those cases are rare.

Non-'40 Act leverage

Thus far, our discussion of leverage types has focused on more traditional forms of leverage that are defined by the '40 Act (otherwise known as regulatory or structural leverage). However, there are other forms of leverage. Common forms of non-'40 Act leverage (sometimes referred to as portfolio leverage) include:

- **Tender option bonds (TOBs)/inverse floaters.**

A CEF may deposit tax-exempt bonds into a TOB trust, which then issues two types of securities: a floating-rate certificate and an inverse-floater certificate. The CEF typically holds the inverse floater and uses the proceeds of the sale of the floater certificates to gain additional portfolio exposure. In effect, this action allows the portfolio to use \$1's worth of net assets to gain a notional exposure greater than \$1. TOBs are typically used by municipal CEFs, and their websites usually include TOBs as a form of leverage, and therefore are included in the leverage-ratio calculation as provided by the CEF sponsor.

- **Reverse repurchase agreements, dollar rolls and TBAs.** Reverse repurchase agreements or repos are typically used with taxable fixed-income CEFs. A CEF may sell a portion of its portfolio to another party with the agreement to repurchase the securities at a later date at a specified price. In the meantime, the interest paid on the underlying bonds accrues to the CEF. Dollar rolls are similar, but because they are used more specifically with mortgage-backed securities, they are a more common type of leverage among mortgage CEFs. Finally, TBAs, which stands for To Be Announced, are forward contracts that are typically used to leverage CEFs holding agency mortgage securities.

- **Derivatives.** Some CEFs use derivatives such as swaps, futures and/or forwards to leverage their assets. The swaps may include credit default

swaps, interest rate swaps or total return swaps. For example, a high yield bond portfolio may hold cash bonds or instead it could write a credit default swap on such credit to achieve the same exposure, albeit on a leveraged manner. A global bond portfolio may use currency forwards to gain exposure to certain markets instead of holding the cash bonds.

- **Long/short positions.** Some CEFs have exposure to short positions, which profit when the positions shorted fall in value, as well as long positions. This long/short strategy serves to increase exposure as long as the gross exposure — the long exposure plus the absolute of the short exposure — is greater than 100%. For example, an equity CEF manager using a 130/30 long/short strategy could short sell a group of securities he/she expects to underperform for up to 30% of the portfolio's value and then use the cash earned to reinvest in the securities expected to outperform. As such, although the net exposure is 100% (130% - 30%), the gross exposure is 160% (130% + 30%). A 130/30 CEF would underperform a similar CEF with only a 100% long position if the securities sold short appreciate and the securities in the long positions fall in value. The reverse is true of course — a 130/30 CEF would outperform a comparable non-leveraged CEF if its long positions appreciate and the short positions decline. A few fixed-income CEFs use a long/short strategy as a way to leverage their assets; however, this way to leverage a CEF is uncommon.
- **Securities lending.** A CEF may loan securities in its portfolio to other parties and, in return, receive cash collateral that it can use for investment purposes. The fund also retains ownership rights in the loaned securities as well.

Many sponsors have put forth the effort to improve the transparency of the type and amount of true leverage used; however, a few still choose to disclose only '40 Act leverage.

Impact of a changing asset level on a leverage ratio

It is important to note that changes in asset values can alter leverage ratios. For example, if an investor

purchases shares of a CEF with a leverage ratio of 33 1/3%, and if a subsequent sell-off occurs in the market, causing the value of the portfolio to decline, the leverage ratio would increase. To illustrate this effect, assume that total assets for this CEF are \$150 million. If the leverage ratio before the market decline was 33 1/3%, we know that the leverage amount was:

$$\$150 \text{ million} * 33 \frac{1}{3} \% = \$50 \text{ million}$$

Now suppose the market selloff causes the portfolio's value to decrease by 40%. The value of the portfolio would then be:

$$\$150 \text{ million} * (1 - 40\%) = \$90 \text{ million}$$

But the fund still owes \$50 million to its creditors.

So the new leverage ratio after the market decline would be:

$$\frac{\$50 \text{ million}}{\$90 \text{ million}} = 56\%$$

In this hypothetical situation the CEF would be forced to reduce its leverage amount because its asset coverage ratios would likely be below the allowable minimums (if using '40 Act leverage). Any reduction in the leverage amount that may be undertaken would likely be accompanied by reduced exposure to the assets which are generating potential returns, i.e. yield. So, in the example above, a portion of the portfolio would need to be liquidated to bring down the debt, and a reduction in the distribution may be required, which could have a negative impact on the CEF's valuation (i.e., the discount may widen or the premium may narrow).

The opposite may also be the case. If the assets were to appreciate substantially over time, a CEF may increase its leverage amount to raise its leverage ratio to the original level. Historically, changes in the leverage amount have been uncommon.

The cost of leverage

Just like leverage adds to an NAV's volatility, leverage may also magnify the variability of the

level of a CEF's distribution. Changes in the cost of leverage, which usually depend primarily on short rates, will impact a CEF's earnings power, and consequently its distribution. The majority of types of leverage involve a variable-rate form of interest cost (the CEFs are charged a spread against a reference rate), while some are fixed-rate in nature. Currently as well as historically, the use of variable-rate types of financing is the more prominent source of leverage and likely will continue to be because it is usually cheaper. However, the earnings of a CEF are vulnerable if short-term rates were to increase. A few of the '40 Act types of variable-rate instruments are listed below:

- **Bank financing** can come in the form of lines of credit, commercial paper, notes, etc. Creditors holding these forms of debt would generally have a senior claim to preferred shareholders as well as to equity holders.
- **Auction-rate preferreds (ARP)** formerly were issued by CEFs, but issuance ceased after the auctions failed in early 2008. Most CEFs have redeemed their ARPs.
- **Variable-rate demand preferred shares (VRDP)**, another type of preferred security paying a variable-rate of interest that was offered in response to the ARPs auction failures in 2008, are different than ARPs in that the rates are set through remarketings run by one or more financial institutions acting as agents rather than through auctions. In general, after providing a preliminary notice of the likely dividend rate, the remarketing agents will solicit existing holders and potential buyers for indications of interest to buy or sell. The agents will then match up buyers and sellers at the lowest possible dividend rate. In addition, if there are more sell orders than bids in a remarketing, a third-party liquidity provider will be contractually obligated to unconditionally purchase all variable rate demand preferred stock. This obligation was not existent among ARPs, which led to the auctions starting to fail in early 2008.
- **Variable MuniFund Term Preferreds (VMTP)** are exchange-listed preferred shares issued by CEFs investing in municipal bonds with a mandatory redemption period (usually 3-5 years).

VMTP rates are based on a fixed spread to the floating-rate Securities Industry and Financial Markets Association Index (SIFMA Index).

We should note that most of non-'40 Act forms of leverage (e.g., reverse repurchase agreements, dollar rolls, and tender-option bonds), in effect, involve a variable interest cost as well.

Some CEFs may use fixed-rate financing as an alternative to variable rate financing, or use fixed-rate financing in conjunction with variable rate financing (e.g., using interest-rate swap contracts paying a fixed rate in addition to lines of credit).

The impact of rising short rates

To illustrate the effect that rising short rates could have on a CEF's distribution using a variable-rate form of financing, we offer the table below. Keep in mind that the cost of leverage of a municipal CEF will be impacted by *municipal* short rates, and not necessarily *Treasury* short rates.

Assume a CEF is leveraged and uses a variable-rate instrument to fund its leverage and the borrowing rate is currently 4%, with some other assumptions in the table. Under this scenario, the fund earns \$1 per share and distributes \$1 per share, so its distribution coverage ratio is 100%. The middle column illustrates the effect on earnings if the rate at which the CEF borrows rises from 4% to 6% — now its income per share is only \$0.90, so it is now earning less than its distribution (the distribution coverage

ratio is now 90%) — and the CEF may have to cut its distribution. The last column illustrates the effect of lower short-term rates and the increase in earnings that would result, all else held constant.

Tolerance for leverage

Even if a CEF is within the statutory limit in connection with its amount of leverage, doesn't mean that leverage near the maximum allowed is suitable for everyone. In fact, no leverage may be best for the most conservative of investors.

When trying to assess how much leverage in a CEF an investor should tolerate, one should take the historical volatility of the underlying assets class into consideration as well. In other words, an investor may be willing to tolerate a CEF with a higher leverage ratio if the CEF holds assets that historically have had a low volatility or are expected to experience low volatility. On the other hand, an investor may find a low leverage ratio to be imprudent in a CEF that invests in an asset class that historically has had high volatility.

Summary

While leverage can serve to augment returns in favorable markets, it can serve to exacerbate losses in unfavorable markets. Changes in short rates tend to impact the cost of leverage and consequently the earnings and distribution of a CEF. Leverage is not appropriate for the most conservative of investors.

The Potential Effects of Changes in Short-Term Rates on Earnings (and Ultimately, Distributions)

	Rates Unchanged	Rates Rise	Rates Decline
NAV per Share	\$10.00	\$10.00	\$10.00
Number of Shares	10 million	10 million	10 million
Net Assets	\$100 million	\$100 million	\$100 million
Leverage	\$50 million	\$50 million	\$50 million
Total Assets	\$150 million	\$150 million	\$150 million
Net Income (8%) Before Interest Charges	\$12 million	\$12 million	\$12 million
Short-Term Interest Rate	4%	6%	2%
Cost of Leverage	\$2 million	\$3 million	\$1 million
Net Income (After Interest Charges)	\$10 million	\$9 million	\$11 million
Net Income Per Share	1	0.9	1.1
Distribution	\$1.00	\$1.00	\$1.00
Earnings Rate	100%	90%	110%

This information is hypothetical and is provided for informational purposes only. It is not intended to represent any specific return, yield, or investment, nor is it indicative of future results.

Source: Wells Fargo Advisors.

Disclaimers

Closed-End Funds (CEFs) are actively managed and can employ a number of investment strategies in pursuit of the fund's objectives. Some strategies may increase the overall risk of the fund and there is no assurance that any investment strategy will be successful or that the fund will achieve its intended objective. A CEF has both a market price and net asset value (NAV), and these two values and their respective performances may differ. Changes in investor demand for a particular fund may cause the fund to trade at a price that is greater (lower) than its NAV, creating a share price premium (discount) to its NAV. CEFs are subject to different risks, volatility, fees and expenses. Many CEFs can leverage their assets to enhance yields. Leverage is a speculative technique that exposes a portfolio to increased risk of loss, may cause fluctuations in the market value of the fund's portfolio which could have a disproportionately large effect on the fund's NAV or cause the NAV of the fund generally to decline faster than it would otherwise. The use of leverage and other risk factors are more fully described in each closed-end fund's prospectus under the heading "Risks."

Derivatives generally have implied leverage. The use of leverage creates special risks including potential interest rate risks and the likelihood of greater volatility of net asset value and market price of, and distributions on, common shares. The use of derivatives may not be successful, resulting in losses to the fund, and the cost of such strategies may reduce the fund's returns. Investing in derivatives carries the risk of the underlying instrument as well as the derivative itself.

Short selling involves sophisticated investment techniques that can add additional risk, and involves the risk of potentially unlimited increase in the market value of the security sold short, which could result in potentially unlimited loss for the fund. In addition, taking short positions in securities is a form of leverage which may cause the fund to be more volatile.

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