



The Value of Short-Selling: Lifting The Long-Only Constraint

Vol. I, December 2006

Peter Cordrey
Managing Director and
Product Manager, Pru Alpha Strategy

Short-selling as an investment strategy has received renewed investor attention over the past 18 months. One of the reasons has been the surge of new “portable alpha” and other long-short strategies that include short-selling as one of their approaches. While virtually all investors intuitively understand the basic rationale for short-selling (“you sell something you think is going to decline in price”), it’s less clear to many exactly how short-selling is translated into investment strategy, and how it can benefit overall portfolio performance.

Our series of “short” papers will examine a range of concepts related to short-selling in fixed income portfolios. In this first paper, we review how removing the long-only constraint can potentially allow managers to translate market insights into investment positions more efficiently.

The Burden of the Long-Only Constraint

Most portfolios managed for pension funds and other institutional plans carry a “long-only” constraint that expressly prohibits short-selling. The purpose of this constraint is generally to limit portfolio risk.

Along with limiting portfolio risk, however, a long-only constraint also limits the potential for portfolio returns. That’s because it prevents a portfolio manager from fully implementing the full range of his or her firm’s research conclusions, notably their *negative* research outlooks.

The long-only constraint is especially problematic for asset managers who take a “relative value” approach to portfolio management. The relative value approach places more emphasis on “non-systematic” or issue-specific factors, such as the change in the relative prices of two different securities, and places less emphasis on “systematic” risk factors, such as the direction of interest rates or the shape of the yield curve. Since issue-specific strategies are a much greater factor in a relative value approach, constraints on issuer-specific investment methods are more likely to limit potential returns in such portfolios.

A Long-Only Constraint in a Corporate Bond Portfolio

Let’s examine the implications of the long-only constraint on an investment grade corporate bond portfolio benchmarked against the Lehman US Corporate Index.

On October 31, 2006, this Index was comprised of 533 issuers.* The largest issuer, General Electric, comprised 3.25% of the Index, and the smallest issuer, Fidelity National Financial, comprised 0.01% of the Index. The bar chart on the next page plots the distribution of all 533 issuers by market value.

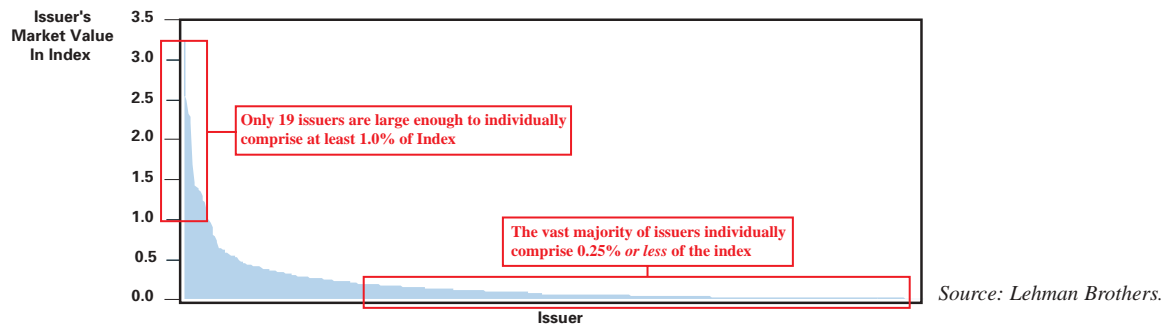
*Source: Lehman Brothers.

Alternative Perspectives

For more information contact:

Peter Cordrey
Prudential Investment Management
2 Gateway Center, 4th Floor
Newark, NJ 07102-5096
973.802.4678
peter.cordrey@prudential.com

Lehman US Corporate Index
Individual Issuers Arrayed By Percentage Weighting in Index
As of October 31, 2006

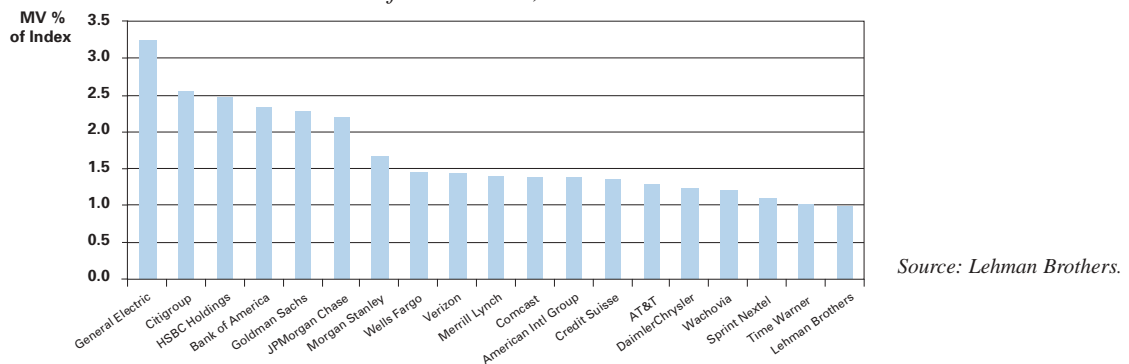


There are two immediate observations about the distribution of this Index: 1) there are only a handful of large issuers, and 2) there are many very small issuers. In other words, only a few issuers have significant representation in the Index, and the significant majority of issuers have virtually no representation in the Index. Let's look more closely at how the two dynamics impact investment strategy.

1) There Are Only A Handful of Large Issuers In The Index

As the chart below shows, General Electric is the largest issuer in the Index, comprising 3.25%. Only a few issuers have individual Index weightings of between 2.0 to 3.0%, with just a few more having individual Index weightings in the 1.0 to 2.0% range. Only 19 issuers – out of a total of 533 – are large enough to comprise 1.0% or more of the Index. The chart below illustrates this more clearly:

Lehman US Corporate Index
Issuers That Comprise 1% or More of Index
As of October 31, 2006



Combined, these 19 issuers represent 32% of the Index. The 50 largest issuers represent roughly 50% of the Index.

2) The Vast Majority of Issuers Are Too Small to Make a Meaningful Difference

The second observation closely follows the first one: that the vast majority of issuers in this Index have weightings less than 0.25% each. The 101st largest issuer – Toyota – represents only 0.25% of the Index. There are 432 issuers smaller than Toyota in the Index, each of which have weightings of 0.25% or less. The 50 smallest issuers *combined* equal just 1.0% of the Index, which is not even one-third of the weighting of the single largest issuer. (On the other hand, the 50 largest issuers represent approximately 50% of the Index.)

How Long-Only Managers Seek to Outperform Indices

For a long-only portfolio manager to outperform this Index, he or she would have to do one or both of the following: 1) establish larger-than-benchmark weightings in the best-performing issuers, and/or 2) establish smaller-than-benchmark exposures, or no exposure, to the worst-performing issuers.

Asset managers typically employ large credit research staffs to make these determinations. Analysts spend large amounts of time performing fundamental credit research on corporate issuers, and through this intensive process, invariably form strong convictions that certain issuers will outperform the Index. Importantly, **they form equally strong convictions that other issuers will underperform the Index.**

Long-Only Managers Can Fully Express Views Only On Issuers Expected to Outperform

Long-only managers are able to *fully* express their convictions only on those issuers they expect to outperform. In those cases, they can establish larger-than-benchmark positions in the issues. For example, overweighting Wells Fargo (1.46% of the Index) by 2% would create a portfolio position of 3.46%, with net risk exposure to benchmark of 2%. Should Wells Fargo outperform by say, +100 bps, the gain to the portfolio would be +2 bps from that single position, a meaningful impact.

Long-Only Managers Cannot Fully Express Views on Issuers Expected to Underperform

In contrast, long-only managers *cannot* fully express their convictions on issuers they expect to underperform. A long-only manager would underweight issuers he or she expected to underperform. However, because the Index is concentrated in just a handful of large issuers, there are only a few opportunities to underweight an issuer enough to make a meaningful difference in a portfolio.

Let's use Bank of New York, which represents 0.21% of the Index, as an example. If a long-only manager believed Bank of New York was going to underperform, the most he or she could do would be to underweight the issue completely, that is, have no position in Bank of New York at all. The maximum possible underweight, and therefore the maximum potential effect on the portfolio, would be 0.21%.

Here's why: in the underweight scenario, the most "negative exposure" a long-only manager could create would be the benchmark weighting itself: 0.21%. Even if the long-only manager's research was 100% prescient, even if (hypothetically) Bank of New York declared bankruptcy the very next day and its bonds traded to zero, the maximum benefit to the long-only portfolio would never exceed the Index weighting. In contrast to the Wells Fargo example above, should Bank of New York *underperform* by -100 bps, the gain to the portfolio would only be +0.21 bps, a negligible impact.

Removing the Long-Only Constraint Improves Implementation Efficiency

While the argument to sell short has often been predicated on exploiting temporary market inefficiencies, or acting on imperfect information, the real potential of short-selling may simply lie in its ability to *increase the efficiency with which existing investment ideas are implemented*. This concept is called "implementation efficiency". Just as we now routinely quantify how efficiently an asset manager executes trades, we can also quantify how efficiently an asset manager can translate a research conclusion into an active, alpha-generating portfolio position.

The concept of "implementation efficiency" has been examined at some length in academic research. In particular, Roger Clarke, Harinda de Silva, and Steven Thorley focused on it in their article "Portfolio Constraints and the Fundamental Law of Active Management" in the September/October 2002 issue of The Journal of Portfolio Management. Their article was based on Richard C. Grinold's earlier work on the fundamental law of active management (1989).

They use the following mathematical equation to express the idea of implementation efficiency:

$$IR = IC * \sqrt{n} * TC$$

Information Ratio = Information Coefficient * $\sqrt{\text{breadth}}$ * Transfer Coefficient

Let's look at each component:

Information Ratio (IR): A well-established concept in fixed income investing, information ratio equals the ratio of excess return to tracking error. It effectively measures the ability of an investment process to translate "risk exposures" into "investment returns". As shown in the equation above, information ratio results from three variables:

- ◆ **Information Coefficient (IC):** This is the correlation between the manager's "forecast" of a security's performance and its actual performance. It effectively measures the strength of the manager's "return-forecasting" signal, or skill at identifying investment opportunities.
- ◆ **Square Root of Breadth (\sqrt{n}):** This is the number of forecasts a manager makes.
- ◆ **Transfer Coefficient (TC):** This measures the degree to which research insights are translated into active portfolio exposures.

A perfectly efficient process – one without any portfolio limitations in which every single investment idea is fully translated into an active portfolio position – can be said to have a transfer coefficient of one. In practical terms, of course, this scenario is highly unlikely. Equally unlikely is the opposite: a completely inefficient process, where no investment ideas are translated into portfolio exposures, resulting in a transfer coefficient of zero. In the real world, portfolios generally fall somewhere in between.

However, the more investment limitations and constraints a portfolio has placed upon it, the lower its transfer coefficient is likely to be. In particular, a constraint that prohibits selling short will dramatically reduce the transfer coefficient, and thereby reduce the information ratio as well.

Mathematically, the equation above shows us that additional potential gains from short sales don't require new or better research or investment insights. Rather, they can result simply from improved implementation efficiency: putting the *full extent* of existing research conclusions to work. In other words, the ability to sell short can improve how an existing investment process translates investment ideas into tangible alpha. Just as institutional investors have long been focused on implementation costs, such as trading, they can now evaluate the equally important implementation *efficiency* as well.

Removing the Long-Only Constraint Can Lead to Higher Information Ratios

In an environment where yields have declined and fixed income returns are both lower and tightly clustered, it is increasingly important to extract each possible basis point of available alpha from every possible source. Long-only portfolios, because they are constrained by their inability to fully express negative convictions, are not able to do this. Long-only portfolios, in other words, are less efficient in transferring investment ideas into alpha. This lower efficiency, in turn, often translates into lower information ratios.

We saw earlier what happens when a long-only portfolio, through its research process, develops a strong negative conviction on an issuer. Underweights established this way are limited to the percentage weighting of the issuer in the Index, which, in a diversified portfolio, could be an insignificant position despite what may be a strong research-based conviction on likely underperformance. **This is a clear loss of efficiency: valuable research laid to waste.**

Conclusion

In summary, removing the long-only constraint in a portfolio would increase the opportunities for the manager to take meaningful positive *and negative* active exposures in bonds, regardless of their Index weights. Removing the long-only constraint would permit the manager to better align the portfolio's active weights – on both the positive and negative sides – with existing research conclusions and expected outcomes. No new research need be done. Because active weights in a “long-short” portfolio would be more precisely correlated with expected alpha, the portfolio would likely reflect a more efficient utilization of investment insights than a long-only portfolio.

What About Other Indices?

While we used the Lehman US Corporate Index here for illustrative purposes, most US credit indices are similarly structured: a large, diversified group of issuers, dominated by only a handful of very large issuers. Because these indices are so concentrated in the largest issuers, it is very difficult for a long-only portfolio to materially outperform an Index by simply underweighting the bad performers. There just aren't enough large issuers to take meaningful underweight positions in, and the underweight positions that are established are inherently limited by the issuer's weighting in the Index.

We would point out here that this “challenge” is even more pronounced in portfolios benchmarked against the most commonly-used fixed income index, the 7,086-issue Lehman Aggregate Index. In the Lehman Aggregate Index, for example, Wells Fargo represents only 0.28%.

© Copyright 2006, Prudential Investment Management, Inc. Prudential Financial and the Rock logo are registered service marks of The Prudential Insurance Company of America and its affiliates. Prudential Investment Management (PIM) is the primary asset management business of Prudential Financial, Inc. Prudential Investment Management - Fixed Income is PIM's largest public fixed income asset management unit, and operates through Prudential Investment Management, Inc., a registered investment adviser and a Prudential Financial company. The comments, opinions and estimates contained herein are based on or derived from publicly available information from sources that Prudential Investment Management believes to be reliable. We do not guarantee their accuracy. This commentary, which is for informational purposes only, sets forth our views as of this date. The underlying assumptions and these views are subject to change. There is no guarantee that the views expressed will be realized. The securities shown are for illustrative purposes and not recommendations or representative of Prudential Investment Management holdings. All index weightings are as of October 31, 2006.