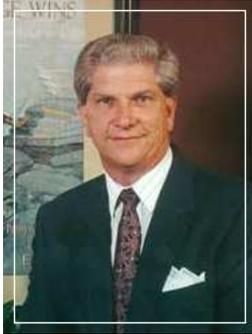


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Asset/Liability Management

The Solutions Company



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Fundamental Indexes ... for Bonds !

The first bond indexes were born June 1973 created by Art Lipson (my boss) at Kuhn, Loeb. As my mentor, I owe Art much for his educational leadership. When Lehman purchased Kuhn, Loeb at the end of 1977 such indexes became the Lehman bond indexes. Art went off to become one of Lehman's best bond salesmen and I ran the Lehman Fixed Income Research department. It was a great time for bonds as interest rates kept rising during a five year bear market to as high as 15% on long Treasuries. Bonds were in vogue then and I had the opportunity to design many of the popular Lehman bond indexes during this popular period for bonds. Since there was no bond exchange, you needed a Wall Street broker/dealer to price all the securities that comprised a bond index as well as calculate all of the difficult performance, yield and duration calculations. By 1979, Lehman became *the bond benchmarks* and history has solidified this claim. These Lehman bond indexes were built to measure the bond market under traditional rules with trading and investment banking biases. However, such *Sacred Cow* bond indexes need to be reexamined for structural problems as well as are they the best fit for ETF designs. I strongly suggest a new breed of bond indexes are needed that correct traditional problems and best fit ETF investors. Traditional bond indices tend to have a series of structural problems that distort the true risk/reward behavior of such portfolios:

Weights

A hot equity trend is towards *fundamental indexes* that challenges traditional cap-weighted indexes and suggest new weighting schemes based on fundamental financial data (Rob Arnott (RAFI) = four fundamental weights, Vince Lowry (Tigers) = Revenue weighted, WisdomTree = Dividend weighted). These fundamental weights consistently show a higher return than cap weighted for the same index portfolio. Well, what about bonds? Most popular bond indexes are also cap-weighted (market weighted). The problem is actually more critical with bonds since to market weight a bond index requires knowing the amount outstanding. As simple as it sounds, this is mission impossible for Treasury, Agency and mortgage-backed securities. Treasuries and Agencies are *stripped* and either reported delinquently or not at all. Traditional bond indexes ignore this and weight these government securities based on original issue amounts (invalid math). This is why zero-coupon bonds do not appear in most bond indexes since it would be double counting. As a result, traditional bond indexes weight Treasuries and Agencies by the original amount outstanding which overweight these issues and skews all index summary

statistics. Mortgage-backed securities have principal payments every month that are reported well after the end of the month. As a result, mortgage backed securities use the last reported information which is from a different month. Since prepayments are highly seasonally, a high summer prepayment could be used as the prepayment during the lower prepayment fall season which would calculate the wrong prepayment return for that month (invalid math).

Composition

A second problem with traditional bond indexes is that they tend to be large portfolios with **wide maturity bands** (i.e., 1 year and longer, 1-10 years, 20+ years) that own all bonds within that maturity band criteria based on certain liquidity and rating rules. Such maturity band indexes usually have significant drifts in average maturity which can significantly affect their risk/reward behavior as new issues are added and old issues are deleted from these large bond portfolios. Moreover, old issues tend to be difficult to price even for Treasuries which create obvious problems for index funds (like ETFs) that are trying to duplicate or match the risk/reward behavior of the benchmark index. These well seasoned issues are usually much higher coupons causing large, if not volatile, coupon and duration drifts as these issues enter and then leave these index portfolios (especially Treasury indexes). Similar to a maturity shell game, try to find the accurate risk/reward measurement of such an index construction. Investors receive index portfolio summary statistics which can be very misleading data and are certainly not an accurate measure of the risk/reward profile of such an index portfolio. To prove my point go to any bond calculator and insert the summary statistics of most bond indices and see if you get the same duration or yield as the index reports. The problem here is that you can only invest in the information provided. Index portfolio averages are not an accurate gauge of the interest rate sensitivity of most traditional bond indexes due to their portfolio turnover and statistical drifts.

Transparency

Another problem is that these traditional index portfolios tend **not** to be very **transparent** which puts most investors in the dark as to what these indexes portfolio holdings actually consist of. Few traditional bond indexes display their portfolio holdings freely. There should be a requirement by the SEC that to be a benchmark index for ETF purposes such indexes must provide enough proper information to help the investor understand the potential risk/reward behavior they are buying including full disclosure of the portfolio not just summary statistics.

Pricing

One more problem is that most traditional bond indexes are heavily weighted to **old issues**. Such well seasoned bonds usually lack liquidity and are difficult to price. Since there is no bond exchange, many traditional bond indexes use *matrix pricing* which is a computer price and quite often not a market price. The larger the bond index portfolio, the more problems you will encounter.

Trade Date vs. Settlement Date

Some bond indexes use a settlement date rule basis. This is wrong! Based on any trade confirmation and SIA standards, **you own the bond as of trade date not settlement date!** As a result, any price return movement starts with trade date. Beware of bond indexes that use a settlement date methodology as any bond that enters this index will not have a price return until after settlement date.

Solutions ... Ryan Indexes

Ever since I left Lehman, I have been on a mission to produce indexes that are a solution to some financial problem. Thanks to a devoted team of talented employees we have achieved a lot (i.e. 1st *Daily* bond index, 1st STRIPS Index, 1st Liability Index, 1st bond ETF filing, etc.). All Ryan indexes are designed and built as a solution to the problems listed earlier. Below are some of the attributes we believe are needed for a proper bond index. Given the fundamental index trend in equities, the finance industry should study bond indexes and demand a better version or new breed of bond indexes that best fit what investors need. Listed below is what all Ryan Indexes currently bring to the market.

Equal Weights

If you can not accurately market weight a bond index you should equal weight. This removes the weighting bias altogether (no skewness). In fact, this is how most portfolio managers think and work. They usually analyze and rank bond securities pari-passu. Unless it is an index fund, they usually buy bonds without a weight bias. In fact, most institutional investors have a weight limit that requires that no issuer can exceed 5% of the portfolio. Unlike common stocks where there is only one issue per issuer, there are normally many bonds per issuer. In fact, the worst the credit usually the greater number of bonds suggesting that market weighted bond indexes tend to get skewed to the worst credits through time (unless Treasury indexes). What investor would want more of a worsening credit ... counter intuitive. Equal weighted bond indexes are a solution!

Constant Maturity/Duration Indexes

Interest rate risk dominates the bond market. Based upon the Notre Dame of 1986, interest rate risk accounted for 96% to 98% of the major bond indexes total return behaviors. It is the systematic or market risk. Any bond index that is not clear on its interest rate risk is not a good bond index. Such **interest rate risk is best measured by a constant maturity or duration** so investors are not affected by the maturity/duration drifts that plague traditional bond indexes. Such maturity and duration drifts cause serious risk/reward behavior changes such that investors are not clear on what interest rate sensitivity is being measured. Bonds with negative convexity behaviors (mortgage-backs) and call problems that can radically change the interest rate behavior of any bond should not be allowed in any index rule composition that is measuring a well defined maturity or duration band (i.e. long maturity index with callable bonds).

Liquidity

Most traditional bond indexes are heavily skewed to older small issues that are not very liquid. Narrowly defined (smaller) bond index portfolios based only on the largest and most liquid issues would provide the greatest bond portfolio liquidity. It would also be the easiest to price and duplicate (buy). The question should be asked of any bond index methodology ... if you can't buy it or price it why use it?

Pricing

Traditional bond indexes are usually forced to use a computer matrix price given the large number of issues in their index portfolio that are illiquid. Usually only the most recent large issues have the greatest liquidity and pricing ability. It is an unfortunate situation but there is still no bond exchange today although the NASDAQ TRACE system seems to be a potential

solution. Without a bond exchange or generally accepted price, given the same portfolio or issues, investors may get several different prices for the same issues depending on their sources. Such a pricing deviation leads to unclear or erroneous performance measurement and attribution.

Transparency

For any bond index to be used as a benchmark or bogey for institutional and ETF purposes it should be transparent as a rule. This would suggest that accurate summary statistics plus portfolio holdings be provided on a frequent and freely available basis. The best solution is via the internet. Some bond indexes require a fee or subscription to view critical data like portfolio holdings.

Given the wrong index ... you will get the wrong risk/reward