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Making investment data work.

Rethinking Benchmarks You Use:
Should They Reflect The Fees & Transaction Costs?

10th November 2022

Agenda

- What are transaction costs?

- Transaction costs – what do you think?

- Indices that contain Transaction Costs

- ICE BofA Fixed Income Methodology

- Markit iBoxx Methodology

- Comparison of Returns

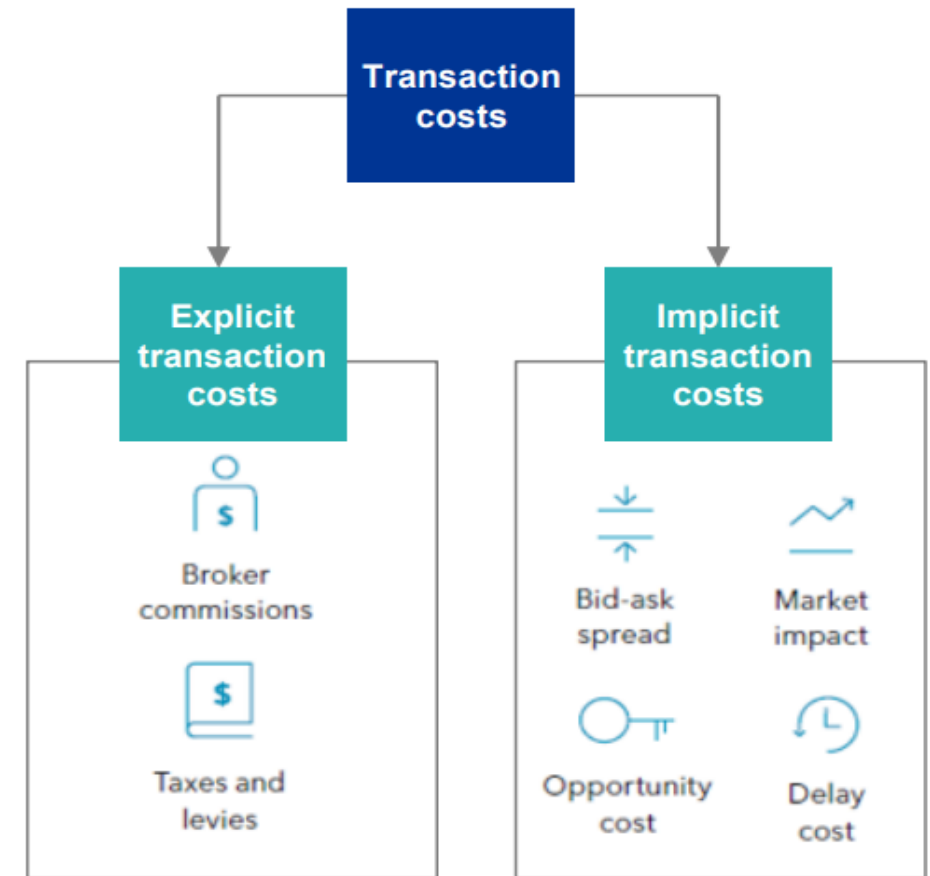- Closing Remarks

What are Transaction Costs?

Transaction costs are made up of explicit costs – identifiable and easily quantifiable – and implicit costs which cannot be directly observed.

Explicit costs

- The **commission** that a broker charges
- **Clearing** costs
- **Exchange** fees
- Any **taxes** or **levies** payable

Implicit costs

- Arise from the **bid-ask spread** and from the **market impact** of trading in larger size.
- **Opportunity Cost**
- **Delay Cost**

Source: https://www.blackrock.com/corporate/literature/whitepaper/viewpoint-disclosing-transaction-costs-august-2018.pdf

Transaction Costs in benchmarks: okay or not okay?

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Transaction costs in benchmarks: okay or not okay?

by David Spaulding | Apr 29, 2022

One of the challenges with market indices is they do not include transaction costs; and this has always been seen as a disadvantage for portfolio managers, whose trades typically come with such costs. And despite the fact that these charges have reduced significantly over the years, sometimes to zero, their inclusion in their trades and absence from the index provides a slight hurdle for them to overcome.

Well, at least one market index provider is introducing indexes that include transaction costs; and, we have advocated for some time the use of exchange traded funds (ETFs) as substitutes for market indexes.

Is there anything wrong with using benchmarks that include transaction costs? Nothing we can think of. In fact, it seems to be a perfect idea. The only key is understanding what those costs are and how they compare with what the manager is paying: it would be unfair if the index is reflecting higher fees than the portfolio

What do you think? Please let us know.

Source: https://spauldinggrp.com/transaction-costs-in-benchmarks-okay-or-not-okay/

Indices that contain Transaction Costs

- **ICE BofA Fixed Income Indices**

  - ICE BofA Fixed Income Indices
  - ICE BofA Fixed Income Custom Indices
  - ICE BofA Fixed Income Convertible Indices
  - ICE BofA Fixed Income ESG Indices
  - ICE BofA Fixed Income 4PM Indices
  - Not Included: Spot currency indices, money market indices, swap indices, and any other indices solely comprised of synthetic securities, such as the US Treasury STRIP series and US Pension Index series.

- **Markit iBoxx Indices**

  - Markit iBoxx Liquid Indices

- **Custom Indices (net of fees)**

ICE BofA Fixed Income Methodology

- The transaction cost will be calculated based on the bid-offer spread of each security, with the return adjustment applied to new additions to an index, and to any securities whose weights increase in the index, at each monthly rebalancing beginning 30th June 2022

- For each index security the transaction cost is calculated at each month-end rebalancing as follows:

$$TC_{i,t} = \frac{spread_{i,t}}{price_{i,t} + accrued_{i,t}}$$

Where TC is the transaction cost of security i at calendar month end date t, and spread is the ask price minus the bid price for security i at calendar month end date t. Where price represents the price of the security in the index.

- The transaction cost is applied to each security in an index based on its percentage market value added to the index at the rebalancing

$$MVA_{i,t} = \max\left(0, \frac{Wt_{i,tNEW} - Wt_{i,tOLD}}{Wt_{i,tNEW}}\right)$$

Where Wt is the security percentage weight in the index at point t for the upcoming month (tNEW) and the ending weight at point t for the prior month (tOLD).

Thus, any new additions to an index would see the full impact of the transaction cost applied to the position, where an increase in weight for an existing security would see the impact applied proportional to increase in weighting for the coming month.

Source: https://www.ice.com/publicdocs/data/Bond_Index_Methodologies.pdf

ICE BofA Fixed Income Methodology

- The impact of transaction costs is calculated at each month end rebalancing date (t) for the upcoming month.

- The transaction cost (TC_t) is then subtracted from the price return and total return of the indices from the first global business day of each month as described below.

$$Transaction\ Cost\ (index)\% = TC_t = \sum_{i=1}^{k} TC_{i,t} * Wt_{i,t} * MVA_{i,t}$$

Markit iBoxx Methodology

29th April 2003 Inclusion of new bonds into Markit iBoxx indices based on ask price

- The calculation of the iBoxx indices is based on **bid prices**

- New securities are included in the indices at their respective **ask prices** when they enter the index family

- If no price can be established for a particular security, the index continues to be calculated based on the last available price. This might be the case in periods of market stress, or disruption as well as in illiquid or fragmented markets.

- If the required inputs become impossible to obtain, IHS Markit may consult market participants prior to the next rebalancing date.

Source: https://www.markit.com/Documentation/Product/IBoxx/Methodology

Markit iBoxx Methodology

The rebalancing cost factor for iBoxx **Liquid** Indices

2.3) Rebalancing cost factor for liquid indices

At the end of each month, after the rebalancing, the index level of most liquid indices is adjusted to account for the cost occurred in rebalancing the index. For most of the index adjustments between two rebalancing dates, the adjustment cost should be zero and no adjustment will be necessary. There are two approaches to capture the cost. The cost is either fixed (e.g. 2bps) or takes into account the actual transaction costs:

$$Cost^{TR} = 1 - \frac{W^-_{CASH,TR} + \sum_i \frac{MV^P_i}{MV^I_i} \cdot W^-_{i,TR}}{W^+_{CASH,TR} + \sum_i \frac{MV^P_i}{MV^I_i} \cdot W^+_{i,TR}}$$

$$Cost^{PI} = 1 - \frac{W^-_{CASH,PI} + \sum_i \frac{P^P_i}{P^I_i} \cdot W^-_{i,PI}}{W^+_{CASH,PI} + \sum_i \frac{P^P_i}{P^I_i} \cdot W^+_{i,PI}}$$

The investor has to rebalance his index-tracking portfolio by adjusting the weights of each bond in his portfolio to the new weights of the bond in the index. Any bonds that need to be sold will be sold at the bid price, while bonds purchased are bought at the offer price. If the pricing of a bond in the index deviates from the prices that the investor has to use, he will incur cost. The following table gives a summary by region:

Summary by type (bid/ask indices)

Region	Description	Portfolio price**	Index Price	New Portion	Old Portion	Cost
1	Bond drops out	Bid	Bid	0	f⁻	No
2	(2⁻) Bond does not need to be purchased	Bid	Bid	f⁻	f⁻	No
	(2⁺) Bond has to be purchased*	Ask	Bid	f⁺	f⁻	Yes
3	New bond to a liquid index	Ask	Ask	f⁺	0	No

Comparison of Returns

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- **Methodology changes and challenges**
- Incorporating transaction costs at index level
    - New Index TR calculation = Sum of Bond Contributions – Index Transaction Cost
    - Client systems rely upon the standard: Index Return versus Sum of Bond Contributions
- No bond level return that includes transaction costs
- Requirement to calculate new bond returns and weights
- Limited history available

- **Comparison of ICE BofA US High Yield Index:**

Date	Total Return	Total Return ex Transaction Costs	Monthly Return (TR)	Monthly Return (TREXTC)	Monthly Bps	Cumulative Bps
20220531	1456.324	1456.324	0.00250364	0.00250364	0.000000	
20220630	1357.197	1357.197	-0.06806658	-0.06806658	0.000000	
20220731	1438.94	1439.051	0.06022928	0.06031107	-0.817862	-0.817862
20220831	1404.481	1404.734	-0.02394749	-0.02384697	-1.005233	-1.864136
20220930	1347.995	1348.335	-0.04021842	-0.04014924	-0.691770	-2.505163
20221031	1386.368	1386.821	0.02846672	0.02854335	-0.766288	-3.337762

Closing Remarks

Rethinking Benchmarks You Use:
Should They Reflect The Fees & Transaction Costs?

- Availability of data (breadth and depth)
- Limited universe of benchmarks
- Consistency of methodologies
- Custom Indices
- How about ETFs
- Report Portfolios excluding fees and costs

- Any Final Thoughts?

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RESEARCH
Index Design & Transaction Costs
In order to maximize the benefits of factor premiums, smart beta strategies should be thoughtfully constructed to minimize turnover and the subsequent transaction costs.

Source: https://www.rafi.com/research/index-design-transaction-costs