

The Dirty Little Secret of Passive Investing

by Michael Aked, CFA

Passive investments have a dirty little secret: Their gross returns are materially depressed by implicit implementation costs. You don't see these costs in performance attributions, unbundled management fees, or even standard trading cost analyses. But as we recently pointed out in a *Journal of Trading* article (Aked and Moroz, 2015), the fact that they are unobserved doesn't mean they don't exist, can't be measured, or shouldn't be taken into account when selecting an index strategy. In particular, the implementation of popular capitalization-based indices is *not* costless; indeed, as a percentage of aggregate assets, their implicit trading cost is meaningfully higher than that of well-designed smart-beta offerings.

Hidden Trading Costs

Implicit trading costs are the loss of performance due to transactions occurring at prices that would not have prevailed if investors didn't need to enter trades.

Decades of research have demonstrated that the cost of changes in the S&P 500 Index is significant and increasing.¹ Consistent with earlier academic findings, Chen, Noronha, and Singal (2004) determined that, from announcement day to the effective date, the additional cost of a new index holding rose from 3% in the 1976-1989 period to about 9% in the 1989-2000 period. In our own research, for the 2011-2013 period, the one-year returns earned by additions to the S&P 500 were on average 13% higher than the returns of existing index constituents. Investors pay a substantial premium just because a stock becomes a member of the index.

This outcome is not unique to the S&P 500. It applies to the management of any pool of money that requires

transactions in the market. After all, an index is just a model portfolio, and it cannot be implemented above and apart from the laws of managing money. To attract sellers for stocks you wish to buy, you have to pay more. To attract buyers of stocks you wish to sell, you need to ask for less.

Market players are aware of the practice of paying indexers to accept the market close price. Blume and Edelen (2004) explain it this way:

“Counterparties such as hedge funds or dealers can enter into bilateral agreements with indexers to trade at a yet unknown closing price on the change date and agree to share part of their expected trading profits with the indexers through a better net price than the closing price.” (Page 41)

Blume and Edelen's research confirms that indices bear implementation costs that are just right to compensate liquidity providers for the risks they would assume by providing tradable securities at the closing price on index rebalance days.

Indices Are Not Passive

Because indices are, to varying degrees, incomplete market portfolios, index construction amounts to active management.² Providers choose index holdings by size, liquidity, sector, geography, profitability, and the like. Index designs run the full gamut, from highly systematic, rules-based procedures to largely discretionary, committee-based processes. In every case, the explicit selection criteria, weighting rules, and committee decisions directly affect indices' active shares. Index construction methodologies may seem arcane, but their effects are far from inconsequential.

Capitalization-based indices are inherently biased toward including more liquid, higher-priced growth

stocks and stripping low-priced value stocks of their index certification. Conversely, indices that are not price-linked trade into depressed stocks and out of high-flying ones. Over the same 2011–2013 period covered by our internal S&P 500 analysis, we find that securities that our fundamentally weighted RAFI™ indices wish to *buy* have *fallen* by approximately 13% more than their peers. Liquidity providers have no incentive to pump the price of index holdings that are not weighted by market cap, because doing so would reduce—not increase—their potential profits.

One of the attractive features of capitalization-based indices is their low market impact. Market capitalization closely tracks liquidity. Moreover, cap-weighted indices are self-adjusting; they do not require rebalancing. The only trades they require are occasioned by index changes. Thus, by design, they minimize this particular type of cost.

Nonetheless, capitalization-based indices should not be viewed as costless, especially in aggregate. Our model indicates it would take over \$1.1 trillion in assets for a RAFI index to match the current implicit implementation costs of capitalization-based indices.³

Non-capitalization indices have higher implementation costs on a dollar-for-dollar basis than capitalization-based indices. This we do not contest. But it's lunacy to believe that the implementation of popular capitalization-based indices is costless, that their negative selection and weighting bias is zero, or that their implicit trading cost as a percentage of aggregate assets is currently below that of well-designed smart-beta offerings.

Appendix: Trading Cost Calculations

Implicit trading costs cannot be observed directly but they can be estimated. As to measure is to manage, let's outline the drivers behind our implicit trading cost model :

$$\text{Implicit trading cost} = k \frac{\text{Base impact} \times \text{Effective turnover} \times \text{Tilt}}{\text{Coverage} \times \text{Rebalance frequency}}$$

With some simplifying assumptions, five factors are responsible for the implicit costs associated with trading a strategy:

- The first factor is base impact, which is the ratio of the assets under management to the dollar value of shares traded daily across all stocks in the universe, scaled by a constant.
- Effective turnover, the second factor, is impacted by both replacement turnover and reweighting turnover. This factor reflects the obvious fact that if there were no trades, there would be no implementation cost.
- The third factor is tilt, the weighted-average ratio of the actual weight of a fund to the volume weight of the index, with a volume-weighted index having the lowest implementation cost.
- The ratio of the total trading volume of the index constituents to the total trading volume of the entire universe is the fourth factor, which we call coverage. A portfolio that contains every stock in the universe has coverage of 1.
- The fifth factor is rebalance frequency. More frequent rebalancing, all other things being equal, is associated with lower implicit intraperiod market impact costs. The rebalance frequency applies at the individual stock level, not at the index level.

Endnotes

1. See Arnott and Vincent (1986); Lynch and Mendenhall (1996); and Kappou, Brooks, and Ward (2010).
2. Even broad cap-weighted indices can be considered a form of active management, not so much against the capital markets they purport to represent, but against the macroeconomy. Arnott, Beck, and Kalesnik (2015) write, "From a macro-economy perspective, the cap-weighted market is making obvious and sometimes large active bets, presuming (using a 2014 example) that Apple will be the

largest source of risk-adjusted profits in the world, delivered to its shareholders in the decades ahead. Perhaps true. But it is not yet true. So, from a macroeconomic perspective, the market is making an active bet on Apple today, relative to the much smaller current macroeconomic footprint that it occupies in the U.S. and global economy." Page 63.

3. In this example, we do not give credit for the far-superior incentive alignment for liquidity providers for RAFI indices, nor for the selection and weighting criteria of the RAFI indices.

References

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