IronBridge Capital Management, L.P.
Insights

The Tyranny of Benchmarks

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Some active managers are reporting over 200 basis points of lost relative performance in the last five minutes of trading June 30th. Even the Russell 2000 Exchange Traded Fund (IWM) underperformed the Index by 78 bps on the last day of the quarter. How could that be? They fell victim to the tyranny of benchmarks.

Common stock market benchmarks, while necessary, are artificial and may not fully reflect the reality of the underlying market. Since market prices are constantly changing, benchmarks would need to constantly change in order to be a close-to-perfect depiction of the portion of the market they are supposed to represent. Frequent rebalancing is impractical for passive asset managers because of the associated trading costs. Therefore, most popular benchmarks are built to manage the transaction costs inflicted on index funds. Russell Investment Company chooses the reconstitute their indexes annually. While in reality, the small cap market which investors want to be exposed did not change Friday, June 30th, the benchmark investors are measured against did.

The reconstitution of the Russell 2000 benchmark at the end of June is always an interesting time for the small cap market. This year was no exception. In the last two minutes of trading, many of the companies that moved in or out of the Russell 2000, as a result of the reconstitution, ended the day with significant price moves resulting from trading imbalances. These imbalances caught many passive and active managers by surprise and surely impacted quarterly performance for many investment firms. The following is a brief description of what took place, who won and lost, and why.

Explosive Growth in Passive Management:

In William F. Sharpe's article "The Arithmetic of Active Management," he makes a logical and compelling argument that:

> *"Properly measured, the average actively managed dollar must underperform the average passively managed dollar, net of costs. Empirical analyses that appear to refute this principle are guilty of improper measurement"*

Later in the article he states:

> *"The best way to measure a manager's performance is to compare his or her return with that of a comparable passive alternative. The latter – often termed a "benchmark" or "normal portfolio" – should be a feasible alternative identified in advance of the period over which performance is measured. Only when this type of measurement is in place can an active manager (or one who hires active managers) know whether he or she is in the minority of those who have beaten viable passive alternatives."*

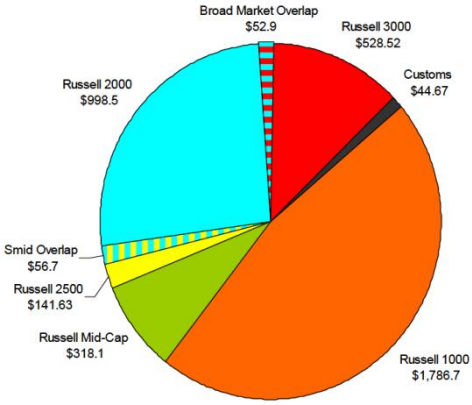
A growing belief by some, that active managers cannot add value through stock selection over the long run, has led to a dramatic growth in passive investment products. Couple this trend with the easy credit through derivatives, exchange traded funds (ETFs), and other structured products, and benchmark definitions gather even more importance. The president of the New York Federal Reserve Bank now estimates that total notional value of over-the-counter derivative contracts exceeds $300 trillion or ten times global GDP! This reflects a three-fold increase from just five years ago. These products allow a relatively small amount of money to be leveraged into controlling significantly more assets, leading to higher utilization of passive and enhanced index-like products.

Money managers, Wall Street broker/dealers, investment banks, and hedge funds all start preparing in the spring for index rebalancing. This is a big business. Russell reports that over $3.8 Trillion are indexed or benchmarked to Russell index products. (see Figure 1) About $1 Trillion of that amount is directly indexed or benchmarked specifically to the Russell 2000. These dollars include mutual funds, institutional assets, passive index, and insurance annuities. If you include the index overlap for assets tied to the Russell 3000 or Russell 2500, the total amount indexed or benchmarked to the Russell 2000 increases to over $1.1 Trillion.

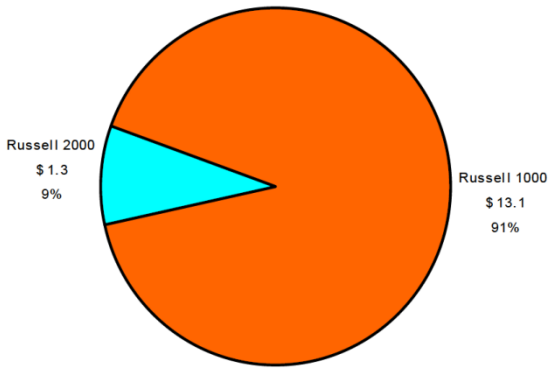
By comparison, Russell estimates the float-weighted market cap of the stocks included in the Russell 2000 to be approximately $1.28 Trillion. While this may seem to leave a very thin margin of excess supply for retail investors, hedge funds, and investment

Figure 1

$3.8 Trillion
Russell Index Benchmarked Asset Distribution
(in Billions)



Breakdown of Assets in the Russell 3000
Broad Market Index
(in Trillions)

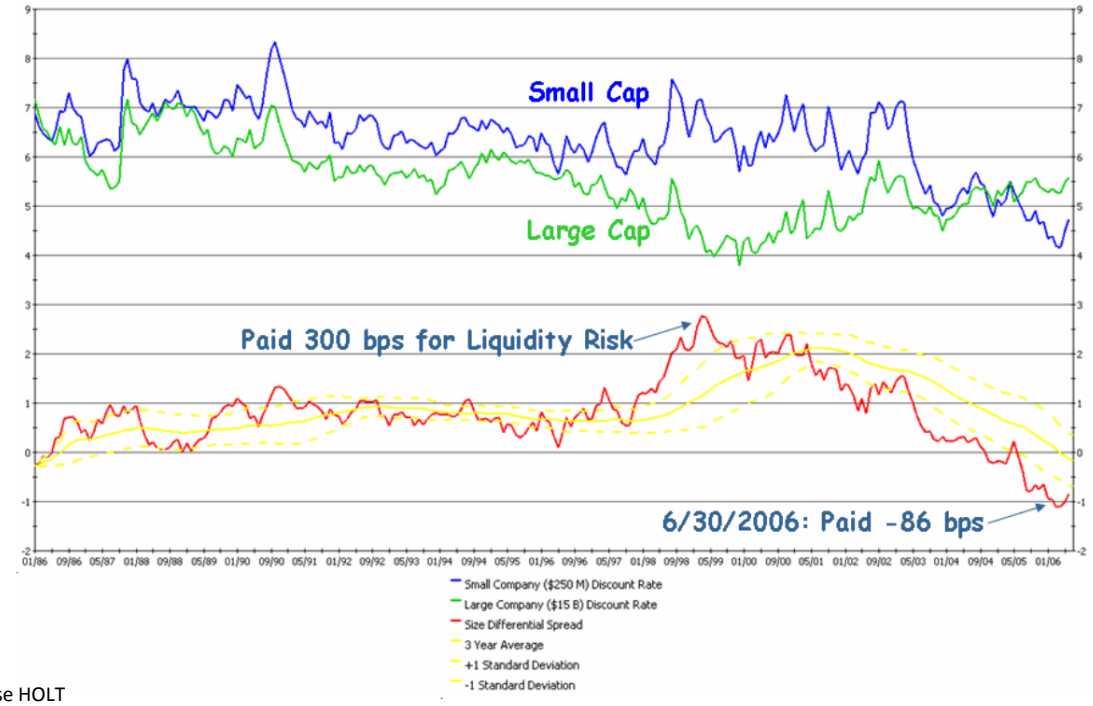


managers tied to other benchmarks, the reality is that any benchmark can appreciate in order to accommodate additional supply of investment capital. Since, at the security level, today's price is a function of discounted future cash flows, all that is necessary to support a higher price is a lower present value factor or discount rate.

The cumulative impact of the growth of passive indexes, enhanced indexes, and other structured products in the small cap market can be observed by reviewing the market derived discount rate for both large and small cap companies.

Graph 1 displays the market derived discount rate for both large and small capitalization companies as calculated by Credit Suisse HOLT. From this graph, it is apparent that the small cap liquidity risk premium has disappeared and actually turned negative over the past year. It is possible that the explosive growth

Graph 1



Source: Credit Suisse HOLT

of structured products, benchmarked to the Russell 2000, has resulted in a lower discount rate than sustainable over the longer term.

Russell Reconstitution

The Russell 2000 Index undergoes a complete reconstitution each year at the end of June. Russell considers this reconstitution necessary to keep the index from drifting away from being the best practical proxy for the small cap market. Russell reports that, on average, 546 names (adds/drops) change each year for the period of 1983 to 2000 representing about 26% of the portfolio market weight. Of the constituents that change, some graduate to the Russell 1000 Index while others drop out of the top 3000 altogether. Some companies also see their index weight reduced while they still remain an index constituent. The replacements come from the opposite direction. By these measures, the 2006 reconstitution should have been relatively uneventful. Less than 300 add/drops were recorded, representing less than 17% of the market capitalization. Table 1 outlines the approximate breakdown of the changes to the Russell 2000 Index for this year's rebalance.

Table 1

Reason for Change in Russell 2000 Index Composition	Float Wtd. Mkt. Cap	% of Index
Market capitalization of the June Russell 2000 Index before rebalance	$1.28 T	100%
Issues that dropped out of the Russell 3000 all together	($0.02 T)	(2%)
Issues that moved from the Russell 2000 to the Russell 1000	($0.19 T)	(15%)
Decreased weighting in Stocks remaining in the Russell 2000 Index	($0.01 T)	(<1%)
Core overlap of the June and July Russell 2000 Indices by float weighted market capitalization	$1.06 T	83%
Increased Weighting in Stocks Remaining in the Russell 2000 Index	$0.08 T	6%
Issues that moved from the Russell 1000 to the Russell 2000	$0.07 T	5%
New issues to the Russell 3000 also assigned to the R-2000	$0.08 T	6%
Market capitalization of the July Russell 2000 Index after rebalance	$1.28 T	100%

What Happened? The Sheep Ate the Foxes!

Certain investors seeking a "free lunch" engage in benchmark front-running and try to make money based on the belief that the stocks leaving the index will sell-off under pressure because large index managers have to sell these issues at a predetermined time (market close Friday, June 30th) and invest the proceeds in the new Russell index constituents, simultaneously driving them higher. Due to the growth in popularity of passive and enhanced index strategies in smaller cap stocks, the volume of stock necessary to facilitate the rebalance in these strategies has exploded. However, the index fund managers, understanding this arithmetic, will try to prearrange as many of these trades as possible with their brokers.

As an aside, index managers are not overly concerned with the price impact of trading a large amount of stock at the market close since price impact, by definition, would affect both managed assets and the index in the same proportion. The primary risk of the passive index manager is in not matching the index. Failure to fill the necessary orders at the market close on the index's "rebalance day" would result in a portfolio mismatch with the index for the market open on the next business day. This mismatch would open the index strategies to significant relative performance risk. How big is this risk? BIG!

Table 2 outlines the day-by-day performance of the June and July Russell 2000 Index definitions for the four days surrounding the rebalance. Also included in the table are the official Russell 2000 performance history and the reverse history (July's R2000 definition is used for the two days in June and June's definition is used for the two days in July). The S&P 600 Index is included for comparison purposes. S&P Indices did not undergo reconstitution over the timeframe presented.

First, note that over the four day period shown, there are more than 200 basis points of performance disparity across the index definitions. This data begs the question, "If both of the Russell 2000 Index definitions are a good proxy for the small cap market, then how can the performance differential

Table 2:

A 200 Basis Points Disparity Between Old and New Russell 2000 Index Definitions

Performance Date	Russell 2000 June Definition	Russell 2000 July Definition	Difference	Russell 2000 Official Definition	Russell 2000 Reverse Definition	S&P 600
June 29, 2006	3.83%	3.54%	*0.29%*	3.83%	3.54%	3.42%
June 30, 2006	1.45%	0.07%	*1.38%*	1.45%	0.07%	0.78%
July 3, 2006	0.35%	0.85%	*-0.50%*	0.85%	0.35%	0.76%
July 5, 2006	-1.31%	-1.49%	*0.18%*	-1.49%	-1.31%	-1.23%
4 Trading Days Around Rebalance	4.32%	2.93%	*1.38%*	4.64%	2.61%	3.72%
Difference from Official Russell 2K	*-0.33%*	*-1.71%*		*0.00%*	*-2.03%*	*-0.92%*

be so large?" On Friday, June 29th, the companies exiting the June index had to significantly outperform the new companies entering the July index. This phenomenon reversed for Monday, July 3rd. Remember, 83% of the market capitalization and 85% of the names overlap the two index definitions. This means that active managers, not trading the index changes, lost as much as 171 basis points of relative performance to an arbitrary benchmark change that did not reflect the reality of the performance of the overall small cap market. Tyrannical!

Second, notice that the performance differential of the two index definitions is exactly the opposite of what was expected under the "free lunch" scenario. It appears that too many "foxes" (hedge funds, and risk arbitragers) decided to take advantage of the predictable "sheep" (index managers). By selling short stocks that would exit the Russell 2000 Index and going long new companies added to the R2000, the foxes planned to close out the trades at Friday's market close and make a killing. The problem with this conventional thinking arises when too many foxes are eying the same sheep. This leads to an oversupply of buy orders at the close for stocks exiting the Russell 2000 Index and an oversupply of sell orders for the stocks entering the index.

Third, observe that official Russell 2000 definition was the best performing outcome of the index alternatives presented. The outcome could have been very different. If the foxes had stayed home, the trading imbalances would have worked in the opposite direction. Since the index funds need the required stock at any price, significant price disruptions could materialize. (Remember, prices don't matter – only transacting the trade at the market closing price matters.) Furthermore, if enough of the index fund orders were not filled at the market close, the price disruptions could persist for days, upsetting the normal market price-setting mechanism and efficient allocation of capital.

There is considerable evidence to support this view. Table 3 displays information about the additions and deletions that occurred at the rebalance of the Russell 2000 Index.

Table 3:

Deletions and Additions to the Russell 2000 Index Composition	Count	# of Stocks Up	# of Stocks Down	6/30 Volume to Six Month Avg.	6/30 Segment Price Return
All stocks moving out of the Russell 2000 & Russell 3000	178	153	25	12.0X	4.74%
Stocks moving from Russell 2000 to the Russell 1000	89	88	1	4.4X	5.77%
New Issues to the Russell 3000 also assigned to the R-2000	228	44	184	10.0X	-3.01%
Stocks moving from Russell 1000 to the Russell 2000	59	1	58	6.5X	-4.09%

The drops are separated into two groups: the stocks moving from the Russell 2000 to the Russell 1000 and the stocks dropping out of the Russell 3000 all together. The reverse is shown for the additions. The data is striking in the near complete one-sided return profile for the day. Ninety-nine percent of the stocks moving out of the Russell 2000 and into the Russell 1000 outperformed on the day on over four times the normal volume. The issues moving from the Russell 1000 into the Russell 2000 did the opposite with 58 of 59 issues down on the day on almost seven times average volume. This price action could, in no way, be described as an efficient market. The new additions did not report universally bad news nor did the drops report unanimously good news. Therefore we must conclude that the efficient allocation of capital broke down and the price-setting mechanism was hijacked by indexers, speculators, and risk arbitragers. Remember, this is not a single stock example. We are discussing the small cap market as defined by a broad 2000 stock index with over $1.3 trillion in market value! The result: active managers lost 50 to 200 basis points of performance relative to the Russell 2000 in the last five minutes of trading, but benchmark arithmetic means that they never get it back.

The Bigger Picture

While this example is easy to capture because of the abruptness of the Russell 2000 rebalance, it is possible that the rapid growth of passive indexes, enhanced indexes, and quantitative trading strategies implemented by large intermittent program trades and utilized as feed stock for many complex leveraged derivatives transactions have the ability to distort or destabilize the efficient price-setting mechanisms described by efficient market theory (EMT). The paradox of EMT is that if every investor believed a market was efficient, the market would not be efficient because no one would analyze securities. As a larger proportion of managed assets moves toward the passive alternatives, we move closer to that world.

Indeed, we believe this is what happened with the large cap tech bubble of the late 1990's. Large-cap active managers struggled to keep pace with the S&P 500 and NASDAQ 100 Indices. As passively indexed assets increased market share, more dollars incrementally went into the largest companies. This created a supply imbalance in certain sectors of the market. For many of the high flying tech companies, there was a very large divergence between the index weightings (index weights were based on market capitalization instead of available float in 1999) and the available float in the US market because majority holdings remained in the hands of founding managements, venture capital firms, and foreign investors. As passive assets approached the limit of available stock, share prices rocketed skyward causing the discount rate to become unsustainably low. As the tech-wreck of the NASDAQ 100 bears witness, this was sustainable until it wasn't.

The beauty of well functioning capital markets lie in their miraculous ability to allocate economic resources into their most productive uses. Through the price setting mechanism, innovative businesses that provide products and services that better meet customers needs, find access to capital to fuel expansion and share investment risk. Companies that fail to adequately meet customer needs bare reduced access to capital. For the system to function properly, it requires active managers that scour through all available data, judging each investment on the merits of the business case, and setting prices by which to purchase or sell securities.

Active managers have an important secondary role, they enhance overall market stability. The beauty of fundamental security analysis is you cannot remove the human element. Present 100 analysts with the same information and you are likely to get 100 different answers. This attribute enhances stability by maintaining an orderly market. As prices change, the decisions of different players will change. For example, if the price of a security moves up, some buyers will become sellers. This will limit the degree to which a security price can move up. In engineering parlance, this is called negative feedback and enhances the stability of a system.

Investment strategies that do not set buy/sell price targets on individual securities do not carry the same negative feedback loop. Passive index managers, for example, own every security in a benchmark in the same proportion as the benchmark. When passive index strategies are stable as a percentage of the overall market within a benchmark segment, the market system should remain stable. This is because any buy programs should be offset by sell programs of equal magnitude. But once passive strategies become of sufficient size, changes in overall market share can become problematic.

While passive strategies are gaining overall share within a market benchmark segment, passive index managers need to invest those monies across the portfolio regardless of price. This indifference to price can have a significant impact on the normal price-setting mechanism leading to higher prices (or conversely lower expected returns) than similar companies outside the benchmark. Theoretically, once the passive strategies own the entire available free float actively traded in a particular company, an incremental dollar invested would drive the stock price to infinity. The system would obviously have a break-down before this would occur since there is not an infinite dollars available in the market.

When passive strategies are losing overall share within a market benchmark segment the opposite occurs. Passive index managers need to sell securities across the portfolio regardless of price to raise the monies redeemed. Again, this indifference

to price can upset the normal price-setting mechanism leading to lower prices (or conversely higher expected returns) than similar companies outside the benchmark. In the absence of enough active buyers, prices collapse like the portfolio insurance debacle of October 1987 and the Tech-Wreck of 1999.

Conclusion

The basic premise of passive management suffers from the fallacy of composition. What is good and sensible for the few can turn very bad when applied to the many. Market stability requires independent actors. As more assets are allocated to passive systems that act in concert, market stability is compromised. Many Wall Street innovations (including portfolio insurance, exchange traded funds, commodity index tracking funds, futures baskets, etc…) are essentially different versions of the same passive concepts that hold the potential to disrupt the markets they participate in. At a more subtle level, price-setting distortions can lead to suboptimal allocation of capital driving investment in projects that otherwise would not have been funded and restricting investment in projects that should have been funded.

Suboptimal allocation of capital restricts economic growth leading to lower employment levels, wage growth, and paradoxically lower market returns than otherwise could have been.

Allocators of capital need to look for and recognize the warning signs. No benchmark is perfect. Popular benchmarks survive because they are commercially viable. Because of daily price changes, IPO's, secondary offerings, and bankruptcies, all popular benchmarks suffer from drift and will stray from being an accurate picture of the market segment they are meant to represent. When securities within a given benchmark start acting very differently than similar securities just outside the benchmark boundaries, watch out! (In the first quarter of 2006, we noticed that the stocks inside the Russell 2000 outperformed similar stocks just outside the index by a whopping 490 basis points. Over the next quarter much of that difference reversed.) Warning signs like these should alert active managers and passive investors alike that investment risk is on the rise. At these times, active managers should not be concerned with short-term underperformance as compared with a arbitrary benchmark. They should remain faithful to their investment discipline and always remember that the intrinsic value of any investment is the present value of future expected net cash receipts.

About the author

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