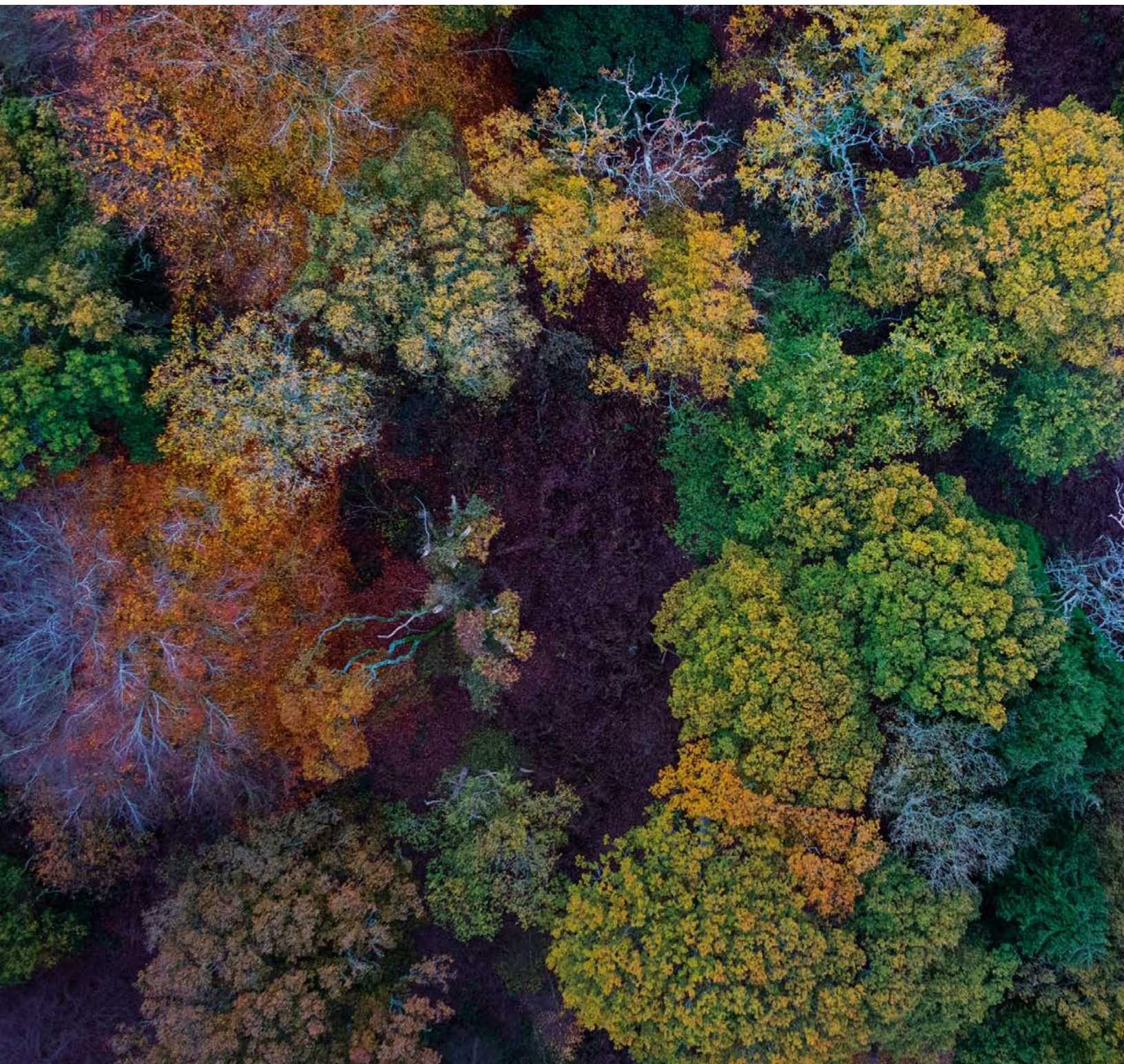


Making a better benchmark: A practical guide to effective market representation

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Everyone knows what makes a good benchmark¹ — right? From time to time, an organization announces it has built “a better benchmark” or “a better index.” Claims such as these are usually supported by simulated historical index performance, insinuating that performance should be considered in the benchmark selection process. Market participants can be confused by these types of claims and consequently overlook important elements of index design and construction that can vary widely — even among indexes that target identical market segments.

Our objective here is to shed some light on this issue. First, we list the important roles benchmarks play throughout the entire investment process. Then, we discuss three core principles of benchmark construction — principles that have guided the design and management of the Russell US Indexes for over 30 years. Finally, we touch on the inevitable trade-offs index providers must consider during the application of these principles in order to provide effective representation.

The many roles of a benchmark

Benchmarks play an important and informative role at every step of the investment process. Economists use them to analyze economic trends, and investors make decisions based on economists’ forecasts. Institutional investors use benchmarks to conduct risk analysis, develop investment policies and create asset allocation strategies. Nearly all types of investors use them to evaluate the performance of their investment portfolios. Benchmarks are also used as a basis for investable products such as mutual funds or ETFs that allow for passive investment in a specific market, market segment or asset class. No matter the use case, it is important to recognize that a benchmark’s primary purpose is not to achieve a certain level of performance. At the most basic level, a benchmark should function as a measure of an overall market’s characteristics and performance — it should effectively represent how the market has behaved over time, whether good or bad. Accordingly, the following three principles exist.

Principle 1: Objective construction methodology

An index that effectively represents a market does so by delivering an unbiased, complete view of the market or market segment it is designed to measure.

This can only be accomplished through the application of objective, transparent construction methodology. Simply put, the method by which the index constituents are selected should be free of subjectivity, as the index should include all of the practical² opportunities available in the market rather than a hand-selected sample. This is also known as the “naïve” alternative to active management, meaning no exceptional knowledge of a market or its constituents should affect which securities are included in the benchmark.

We’ve provided an example to illustrate the implications of not including all available stocks in an investable universe:

For simplicity’s sake, imagine a market in which there are only three companies: Company 1, Company 2 and Company 3. Company 1 has a market cap of \$45 billion; Company 2 also has a market cap of \$45 billion; and Company 3 has a market cap of \$10 billion.

¹ For the purpose of this paper, we use the terms “index” and “benchmark” synonymously to refer to traditional market cap weighted, float adjusted indexes designed to represent a market or market segment.

² Information, data and investment limitations make investing in some “opportunities” impractical, so “practical opportunities” means those assets one could reasonably be able to purchase or sell without extraordinary effort.

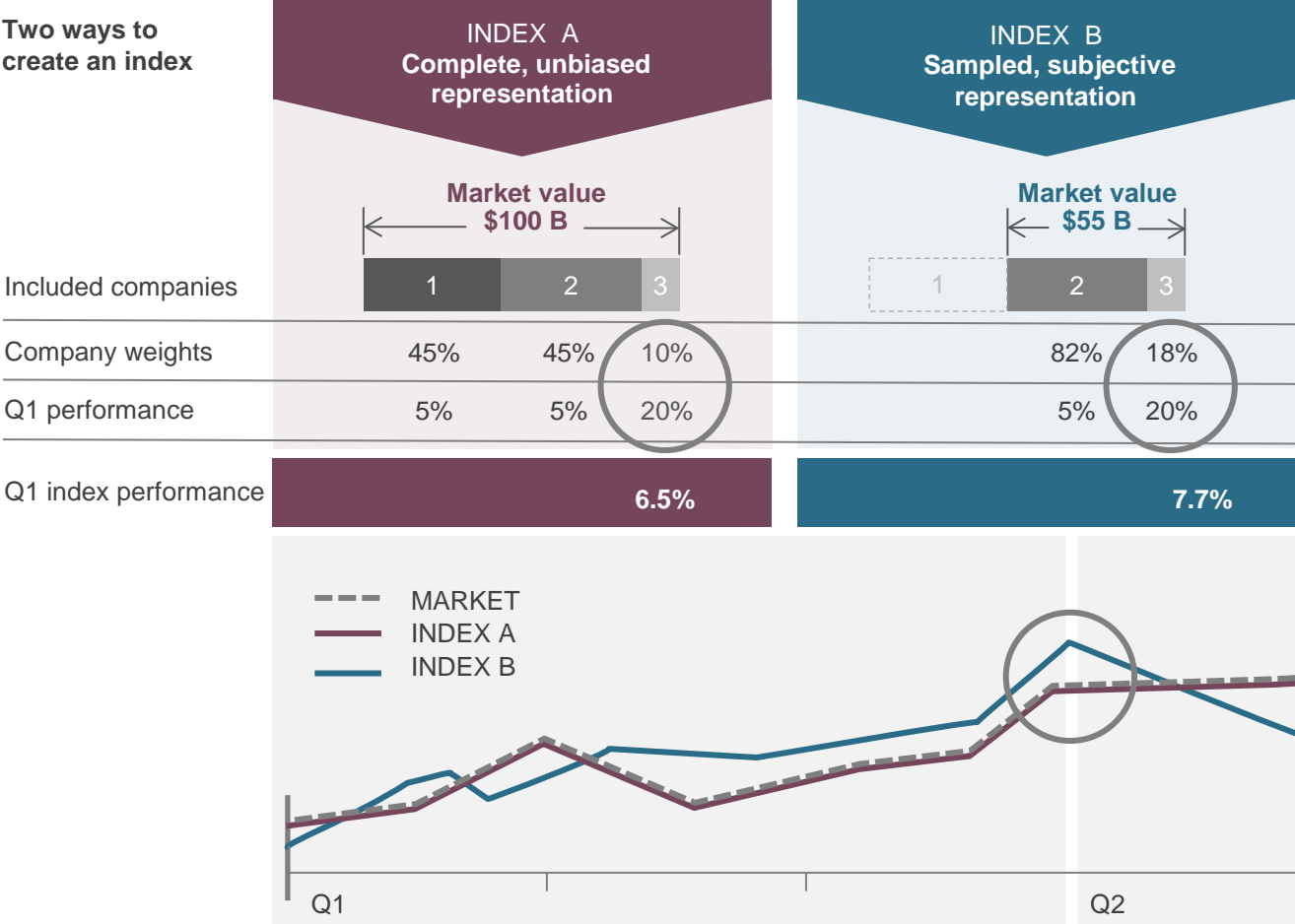
Within our example there are two indexes, and both are commonly used as gauges of the market's behavior. Both indexes are market cap weighted, meaning a company's representation within the index is based on its size, and its performance contributes to the performance of the overall index proportionately.

Our first hypothetical index (Index A) is constructed using an objective approach designed to provide unbiased, comprehensive representation of the market. As such, it holds all three companies at the weights shown in Figure 1.

Our second hypothetical index (Index B) is constructed using a subjective, committee-based approach. In this example, the index committee has decided to exclude Company 1 from membership because Company 1 and Company 2 are of the same size and sector. As such, Index B holds two of the three companies at the weights shown.

Now, let's assume that over a quarter, Company 1 and Company 2 each achieve a return of 5.0%, while Company 3 returns 20.0%. Index A returned 6.5% for the quarter, while Index B posted a 7.7% return. By excluding Company 1 from Index B, the weights of the remaining components were inflated. Since Company 3 happened to perform very well over the quarter, its distorted representation drove the performance of Index B to a higher level than it did as a constituent of Index A. Someone judging an index by its performance alone may feel that Index B is the "better" benchmark, but in actuality, Index A's return of 6.5% is a more accurate reflection of what happened in the market.

Figure 1



Source: FTSE Russell. For illustrative purposes only.

Although this example may seem extreme given its simplicity, whether our hypothetical market had included three available companies or 3,000, arbitrarily excluding opportunities that are practically available to market participants impacts the weights of the rest of the index members. The differences in the weights and returns interact to produce differences in index performance that can be substantial.

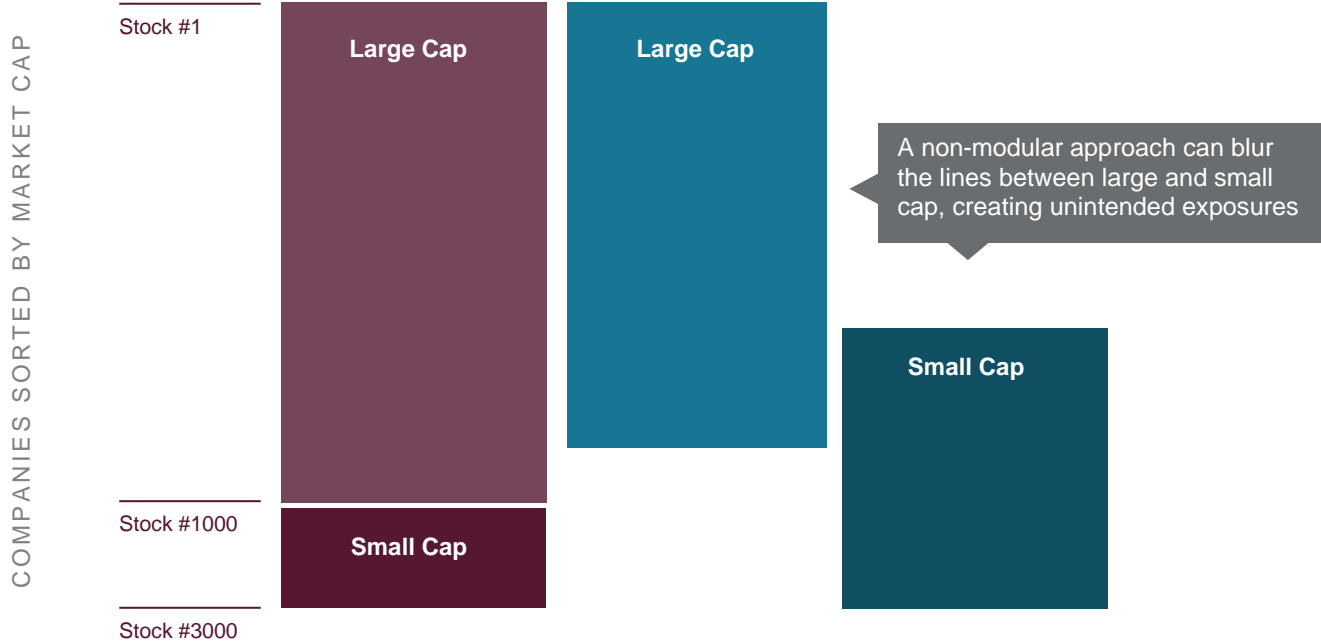
Objective, rules-based index construction methodology has always been at the core of the Russell US Indexes, including the broad-market Russell 3000® Index. There is no sampling or subjective membership selection involved in the construction process. The index is designed to give market participants a broad, unbiased view of the US equity market.

Principle 2: Modular market segmentation

Index users rely on the index providers’ method of segmenting the broad market into distinct building blocks (e.g., large cap and small cap) to provide insight into the current state of the market and inform asset allocation decisions.

Today, all major US equity index providers offer large and small cap flavors, but the method by which segmentation of the market occurs can differ quite substantially across index providers. Large and small cap indexes that are constructed using a subjective, undisciplined approach similar to what we described in our example above tend to lack structural modularity. By modularity, we mean that the broad market index is segmented into modular components, or distinct building blocks, that can be utilized separately and/or combined to form a measurement of the broad market. Utilizing indexes that lack modularity can produce inadvertent exposures and undermine intended asset allocation. For example, if a large cap index that omits some of the practical large cap companies available in the market is being used to define the basket of stocks from which an investment manager may select, the large cap portfolio may be left without exposure to important drivers of the large cap market. Additionally, if the lines between small and large cap market segments are blurred, an investor using the indexes to separately allocate assets to large and small cap segments may end up being more exposed to one (or more) of the market segments than intended (Figure 2).

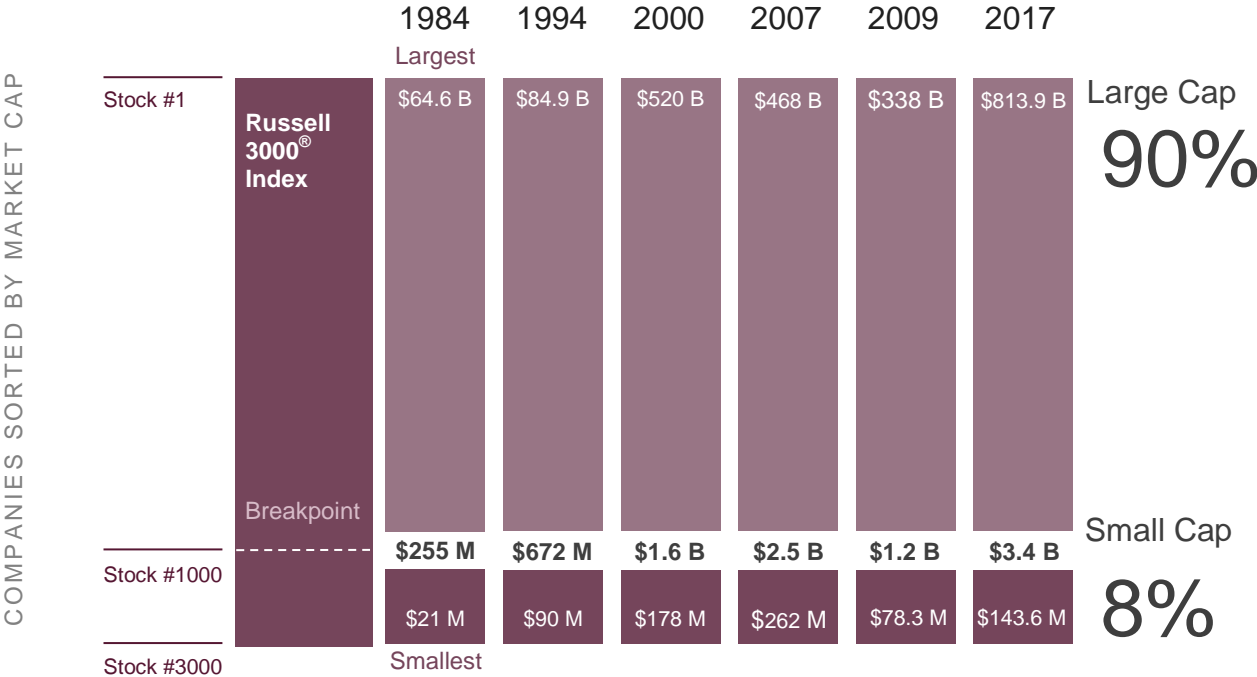
Figure 2



Source: FTSE Russell. For illustrative purposes only.

Two of the sub-components of the Russell 3000 Index — the large cap Russell 1000[®] Index and the well-known small cap Russell 2000[®] Index — divide the broad US market into modular large and small cap segments. An objective, rules-based formula for determining which companies become components of the large and small cap indexes is applied during the annual reconstitution of the Russell US Indexes. All eligible companies are ranked in descending order by total market cap, the largest 1,000 companies become the Russell 1000 Index, and the next 2,000 companies become the Russell 2000 Index. Banding methodology³ is applied around the breakpoint between large and small cap for existing index constituents to negate unnecessary turnover. This time-tested approach to creating modular market segmentations remains as relevant and effective today as it was when the Russell US Indexes were introduced in 1984. Year after year, market cycle across market cycle, as shown in Figure 3, this method has continued to result in the Russell 1000 Index capturing around 90% of US market capitalization and the Russell 2000 Index representing roughly 8%.

Figure 3

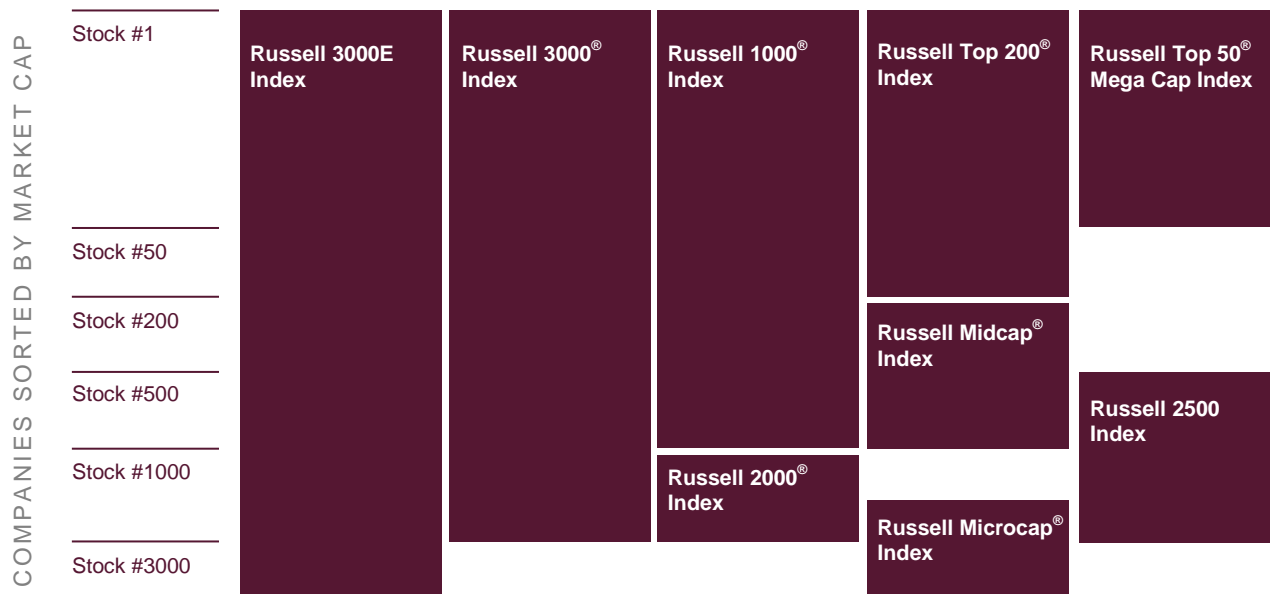


Source: FTSE Russell. Data as of the last trading day in May each year. Past performance is no guarantee of future results. Please see the end for important legal disclosures.

Stemming from the original philosophy that inspired the creation of the Russell 1000, 2000 and 3000 Indexes, the Russell US Index family has since expanded to reflect the diverse and evolving needs of index users. Further dissection of the US market into mega, midcap, SMID and microcap segments is available today, offering additional modularity and flexibility. The entire suite of Russell US Indexes, shown in Figure 4, are building blocks that serve as performance benchmarks and as the foundation for a broad range of financial products such as index tracking funds, derivatives and ETFs.

³ Capitalization banding involves the implementation of a ±2.5% band around the breakpoint. For further information, please refer to the Russell US Indexes construction and methodology document or contact FTSE Russell Client Service.

Figure 4



Source: FTSE Russell. For illustrative purposes only.

Principle 3: Reliable maintenance and governance

It is critical for an index to have in place a disciplined, reliable maintenance process that is backed by a well-defined, balanced governance system.

The market is constantly changing as new companies are listed, existing firms are acquired, and companies grow from small to mid or mid to large cap in size. Indexes that lack the maintenance protocols necessary to reflect market changes in a timely manner tend to have unintended sector and/or capitalization biases.

The Russell US Indexes employ a regularly scheduled series of objective, disciplined maintenance processes, summarized below,⁴ that ensure changes occurring in the market are effectively represented.

- **Annual reconstitution:** The Russell US Indexes undergo annual reconstitution each year in June. During this time, a top-to-bottom recalibration of the market occurs, and all US companies are reevaluated for index membership eligibility and placement. This process includes segmenting companies by size and reevaluating where they lie along the growth/value style continuum relative to their peers.
- **Quarterly additions of eligible IPO:** On a quarterly basis, IPOs are evaluated for eligibility and if requirements are met, they are added to the Russell US Indexes according to a transparent schedule. This process ensures new additions to the opportunity set are reflected intra annual reconstitutions.
- **Adjustments due to corporate actions:** Corporate actions can have a material impact on index representativeness and resulting performance. The Russell US Indexes are adjusted to reflect corporate activity such as mergers, acquisitions, and share adjustments according to a transparent schedule.⁵

What's more, index providers should have a formal governance system in place to proactively evaluate the aforementioned construction and maintenance processes to ensure they are responding and adapting to the evolving market. Meanwhile, consideration must be given to the fact that frequent implementation of index methodology enhancements can be burdensome to the end user. The index governance process must weigh the pros and cons when contemplating changes that may have downstream impact on index users. As is the case with all FTSE Russell Indexes, methodology changes to the Russell US Indexes are reviewed, considered and finally approved within a well-defined governance framework that draws from internal expertise as well as external independent committees of leading market participants.

⁴ Please refer to the Russell US Indexes construction and methodology document for more information

⁵ Please refer to the FTSE Russell Corporate Actions and Events Guide for Market Capitalization Weighted Indexes for further information

Inherent tradeoffs and effective market representation

There is a balancing act involved in providing complete market representation without sacrificing effectiveness. There will inevitably be trade-offs concerning the core principles described above. As examples, we highlight two of these trade-offs: complete representation versus investability, and pure representation versus manageable turnover.

Complete representation versus investability:

An inherent conflict exists between complete representation (representing all companies in a given market within the index) and investability, and it was out of this realization that the Russell 3000 Index was conceived. Prior to its launch in 1984, the incumbent broad-market US index included every single stock trading in the US market, some of which were not practically available (i.e. “investable”). Many of the companies included in the indexes were too small and/or illiquid, so they could not be bought and sold by institutional investors in sufficient volume. The indexes were not fully replicable to those not willing to incur exceptionally high transaction costs or unusual delays in buying and selling illiquid securities. During their extensive consultation work with institutional investors and investment managers, The Frank Russell Company (Russell)⁶ determined that most institutional portfolios did not hold many of the smallest securities in the US market. They found that overall, institutional investors held shares of roughly the largest 98% of US companies. In accordance with this observation, they designed the Russell 3000 Index to provide reasonable representation of the entire, practical investment universe from which most institutional investors were selecting. The Russell 3000 Index continues to this day to capture roughly 98% of the investable US equity market, providing effective market representation by capturing the entire practical opportunity set while excluding stocks of companies that are not accessible to institutional investors.

Pure representation versus manageable turnover:

There is conflict inherent in maintaining an index’s representativeness while also seeking to keep index turnover at a reasonable, manageable level. Whenever companies are added to (or removed from) an index, transaction costs may be incurred by actively managed funds benchmarked to the index or passively managed funds seeking to replicate the index. The more frequently the constituency of the index is updated to reflect current market conditions, the more “pure” the representation, but the greater the turnover. The Russell US Indexes annual reconstitution process, coupled with the disciplined maintenance schedule, was originally designed — and continues to be managed through the FTSE Russell governance process — to address this challenge.

Summary

Benchmarks are used across all stages of the investment process. Index performance should be an outcome, not a design objective. The three principles we’ve outlined — objective construction methodology; modular market segmentation; and reliable maintenance and governance — are essential to an index’s ability to effectively represent a market or market segment. Indexes that ignore these principles can undermine an index-tracking portfolio’s intended market exposure and risk/return profile. Index users should take this into consideration during the benchmark selection process in order to avoid misguided investment decisions and potential unexpected consequences.

⁶ In December 2014 the Russell Indexes division of the Frank Russell Company was combined with FTSE Indexes, creating a new brand called FTSE Russell

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FTSE Russell index expertise and products are used extensively by institutional and retail investors globally. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create investment funds, ETFs, structured products and index-based derivatives. FTSE Russell indexes also provide clients with tools for asset allocation, investment strategy analysis and risk management.

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