

Building Best Practices Benchmarks for Global Equities

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Summary

Financial indices and benchmarks have existed, at least in some form, for over a century. Particularly over the past 40 years, critical advances in index practice have encouraged investors increasingly to rely on them as the common link and basis for the most important practical steps in any investment process. In particular, an investable benchmark is a practical tool used by investors at every stage of the investment process, including (but not limited to) policy portfolio creation, asset allocation, fund selection, performance evaluation and product creation.

Investment industry leaders have repeatedly expressed interest in identifying the best ways to achieve the most important benchmark objectives that support the investment process. These include striking the right balance among accuracy and objectivity, replicability and investability, currency and reliability, cost efficiency and fairness to all investors, so that any investor – institutional or individual – can use the resulting benchmarks with full trust and confidence.¹ However, while some providers make detailed descriptions of their benchmarks readily available, up to now there has been no overall assessment of current benchmarking standards or best practices. This paper aims to provide a framework for such an assessment. This framework is drawn primarily from experience with creating and managing families of global equity benchmarks, but the practices it outlines can be considered for their application to a wide range of asset classes.

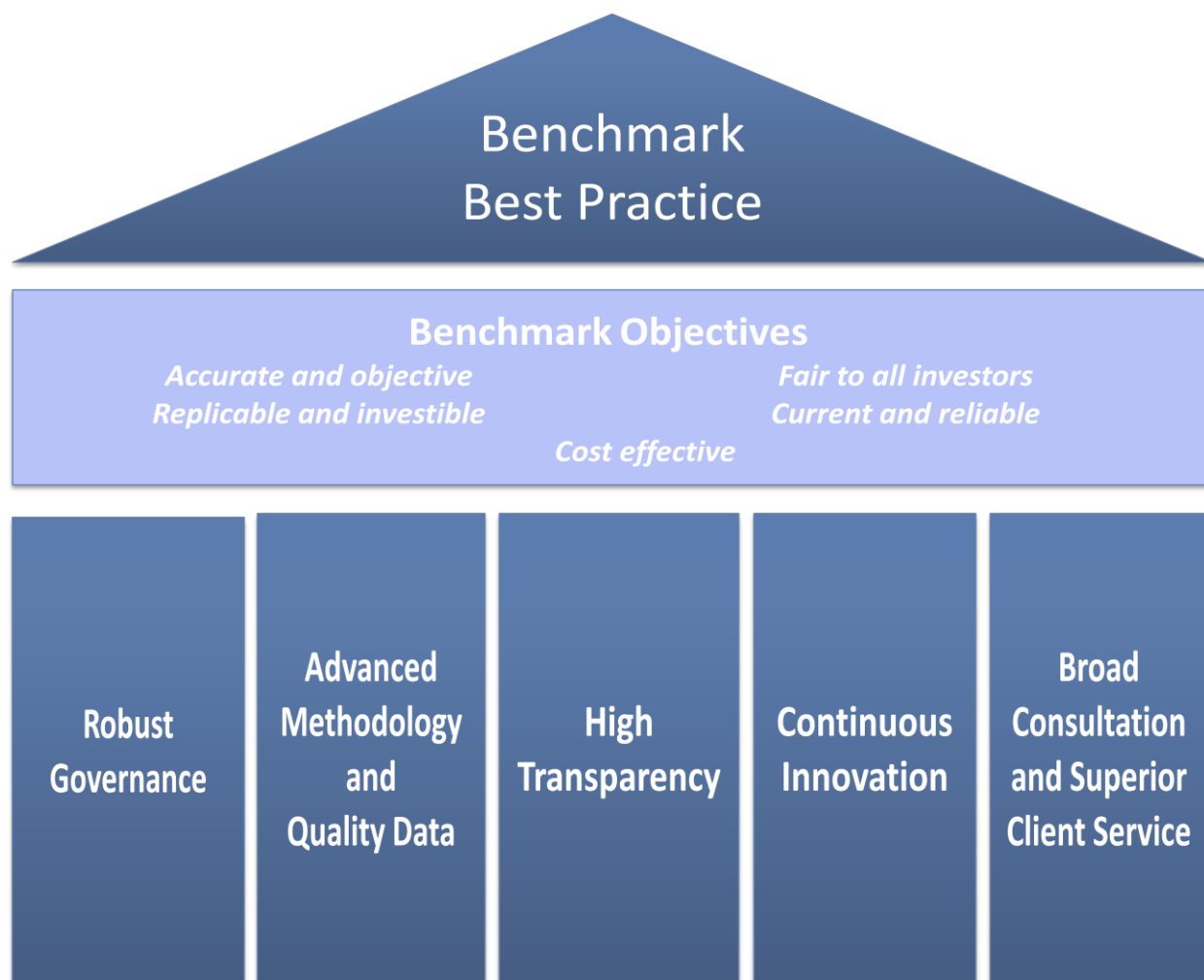
In addressing key benchmark objectives and uses, benchmarking best practice rests on five foundational pillars – robust governance, advanced methodology and quality data, high transparency, continuous innovation, and broad consultation with superior client service. These all serve to ensure the strength and credibility of the resulting benchmarks and benchmark-related data. A weakness in any or all of these pillars can, in turn, weaken a benchmark's ability to accomplish these objectives. Strength in all of these pillars enables investors to use the resulting benchmarks with confidence for purposes such as asset allocation, fund selection, and performance evaluation.

While these best practices are grounded in experience in constructing and maintaining equity benchmarks, many can be seen as applicable to other asset classes. Specific structural limitations in other asset classes and markets – such as the absence of independent exchanges – can affect the ability of benchmarks to achieve certain aspects of these best practices, but as these markets develop, benchmark providers can aspire to them.

The first best practice pillar focuses on developing a proper committee structure, quality assurance, and other aspects of *governance* that are not only designed to ensure high benchmark quality but also independence from inappropriate investor influence.

¹ The International Organization of Securities Commissions (IOSCO 2013) and the European Securities and Markets Authority (ESMA 2013) have recently and similarly defined benchmarks as commercial prices, rates, indices or figures that are calculated by the application of a formula or another method of assessing the value of underlying assets, prices or certain other data, including estimated prices, rates or other values, or surveys. They are used for purposes that include (1) determining the interest payable due under loan agreements or other financial contracts or instruments; (2) determining the price at which a financial instrument may be bought or sold; and/or (3) measuring the performance of a financial instrument. For the purposes of this paper on benchmark best practices, we would emphasize practices that promote investability, replicability, independence, fairness, transparency, and other benchmark objectives – as well as uses, such as asset management and portfolio strategy – that go well beyond these more transactional definitions and uses.

In that vein, benchmark design and operation should not put the interests of one client ahead of other clients of that index.² Benchmarks are called upon to balance competing interests among investors, including issues such as how to handle IPOs and other corporate actions, stocks listed on various exchanges, and a host of definitional questions (size, style, industry classification, etc.). In such instances and in many more, a robust benchmark governance process enables the benchmark to balance competing interests appropriately as well as to handle issues arising from conflicts of interest.



Ideally, the organization responsible for the benchmark should avoid managing assets or executing trading strategies linked to the benchmark. Where that is not possible, there should be thick, high walls between trading and asset management, on the one hand, and benchmark policymaking and execution on the other hand.

The second pillar, *advanced methodology*, includes data quality. Benchmark indexes should be defined, constructed and maintained with the objective of reflecting, in a timely, consistent and cost-effective

² We recognize that benchmarks are designed for different purposes, some of which may be more suitable than others to certain market segments. Even here, the point is that, a benchmark that is suitable to a certain market segment should avoid advantaging one investor over another within that segment.

manner, the evolution of the underlying investment universe. This requires the benchmark to be based on a logical set of rules applied consistently to data that are closely defined, well-documented, properly recorded and regularly reported. Benchmarks also require continuity and consistency of approach over time in order to provide stability and predictability to the marketplace and to keep the level of index turnover at a reasonable level. High quality data are the vital inputs to any methodology and poor data tells the age-old story of garbage in, garbage out. Maintaining high standards in this arena requires the benchmark provider to create and manage robust technology and business continuity processes to meet standards of near-perfect timeliness and reliability in supplying benchmark information to investors. Supporting both advanced methodology and quality data requires a significant investment by the benchmark provider and continuing expenses. As a result, while overall benchmark-level results can often be made widely available, initial access to constituent-level results must often be limited to benchmark customers.

The third pillar, *high transparency*, concerns the degree to which a benchmark, its governance and its methodology are all established, documented, predictable and clear. Clear, accessible rules and a well-understood process allow investors to better understand the benchmark and more easily adjust to changes in the market it represents. Appropriate documentation, for example, can run to 100 pages or more of explanation. Ultimately, investors should be able to clearly understand the benchmark and benchmark governance using publicly available information (for example by being made available on the benchmark provider's web site). Ultimately high transparency can help to limit benchmark "gaming" or frontrunning by investment managers as well as potential conflicts of interest.

The fourth pillar is *continuous innovation*, which reflects a commitment on the part of the benchmark provider to improvement, both for currently provided indices and for developing new benchmarks that reflect fundamental market and investment developments. Choices available to investors increase as new benchmarks are created and current benchmarks are improved to reflect the changing investment opportunity set and changing views of investing. As such, innovation must be built into the benchmark process and structure; without it, benchmarks grow increasingly irrelevant to investors' needs and can drift away from an accurate portrayal of the markets they are supposed to cover.

The final pillar is *broad consultation and superior client service*. This pillar goes hand in hand with the first pillar – robust governance – since broad consultation and client service facilitate accountability and they allow investors to understand potential benchmark improvements so that there is no ad-hoc rebalancing or stealth methodology changes. They also enable the benchmark provider to expand its understanding of investment practitioner needs, enhance products and methodologies based on market feedback and validate its internal quality assurance processes. A global benchmark provider should also be available 24 hours a day to investors and be able to handle the full range of technical and non-technical inquiries that can arise due to market changes and their resulting impact on benchmarks. Customer consultation provides the essential feedback loop for increasing transparency, providing access to data and fueling innovation.

Taken together, these five pillars produce benchmarks that represent significant intellectual property as well as considerable costs involved in developing and maintaining this intellectual property. The result – equity benchmarks that reflect good governance, advanced methodology and data, transparent process, continuous innovation and superior client service – can ensure a quality product that can be widely used by investors for asset allocation, portfolio construction, performance measurement and other key elements of the investment process.

How can investors benefit from benchmarking practices based on these pillars? In simple terms, best practices can help investors achieve a number of objectives, including the following:

- Reduce subjectivity and biases in index construction (Advanced Methodology);
- Achieve lower turnover leading to lower transaction costs, fees and improved tax efficiency (Quality Data / Continuous Innovation);
- Avoid market disruptions, front running, gaming and potential conflicts (Robust Governance / Broad Consultation)
- Avoid conflicts in Manager Selection and Performance Measurement (Robust Governance)
- Reflect the actual investment process (Broad Consultation / Continuous Innovation)

Specific benchmark practices can be organized according to the five fundamental pillars, which in turn support the key benchmarking objectives. This has at least three implications for investors and benchmark providers.

First, best practices are just that: a set of practices that benchmark providers can aspire to and a way of assessing the *relative* quality of benchmarks, rather than an absolute definition of what qualifies as a benchmark. In other words a benchmark may be higher or lower in quality depending on how closely it adheres to these best practices, but it is still a benchmark if it meets the basic definition. These practices are largely drawn from experience with equity markets, but many of them can apply to fixed income and other asset class benchmarks.

Second, best practices require sufficient organizational resources in order to set them firmly under the best practice pediment. Best practice is not only a set of rules, but reflects an organizational commitment to getting it right. This means that building and maintaining the capacity required to provide best practice benchmarks is not a trivial pursuit. Significant commitment of resources and considerable experience are required to develop the expertise and consistency needed to achieve best practice. Analyst teams, benchmark committees, information technology, client services and other resources must not only be sufficient in size, but also experienced in broad benchmark philosophy, methodological and process details and customer needs.

Third, the infrastructure and resources needed to produce and maintain benchmarks at a high level of quality and customer service come at a cost, which is also not trivial. While maintaining independence, benchmark providers incur expenses in providing investors with tools that are essential to the investment process and its assessment. In essence, the required resources and ability to recover expenses are integral in that they enable the benchmark provider to build each of the five foundational pillars of benchmarking best practice and continue to improve them in the future.

Why Do Investors Care about Benchmarks?

In understanding the role that benchmarks play and in assessing their quality, it might seem that the terms “index” and “benchmark” can be used interchangeably. In common practice, benchmarks are really a more precise subset of the broader and looser world of indices. In that sense, an index refers to almost anything that provides a perspective on investment markets (Gupta 2005). An index may or may not contain illiquid and uninvestable securities and it may or may not be entirely representative of a particular market. For example, one of the most popular equity market indicators is the Dow Jones Industrials Average (DJIA), which is an average of the prices of 30 large U.S. stocks. The “Dow” has several attractive features, such as longevity and visibility, but it doesn’t claim to provide a representative picture of the behavior of the entire U.S. stock market. At the other end of the spectrum, the Wilshire 5000 covers the entire U.S. equity market. However, it includes many illiquid stocks and must be optimized to form the basis for a fund portfolio. Finally, there may be indices that

are posted for anyone to use and even to modify, but these may or may not have been constructed in light of investability considerations.

In contrast, a benchmark has several characteristics that set it apart from the wider world of indices. Overall, benchmarks more precisely define as well as represent a specific broad or narrow market and they are usually designed to be investable so that an asset owner can understand the performance dimensions of asset classes or subclasses. Asset owners also use benchmarks to allocate assets to various market segments, assign mandates to fund managers, evaluate the performance of those managers and even create investment vehicles for implementing new strategies and for managing risk. In turn, investment managers can actively or passively manage their funds against the securities a benchmark contains in the appropriate proportions or weights. In all of these uses, a benchmark's risk and return profile provides a simple, independent and objective yardstick for determining the efficiency and the success with which active or passive managers implement the investment process in actual portfolios or individual instruments. In sum, a benchmark is a practical, precise tool used by asset owners, managers and investors at every stage of the investment process.

By fulfilling these needs, benchmarks effectively serve as the common link throughout the entire investment process. First and foremost, benchmarks guide and gauge investment management performance. A performance benchmark can significantly improve an asset owner's evaluation of active and index managers by helping to recognize the existence of true investment and/or implementation skill. Second, by highlighting the true contribution of managers, benchmarks contribute to a more efficient allocation of assets in a multiple manager portfolio. Finally, analysis of benchmarks can identify the various sources of risk that a portfolio is exposed to and thus enhance an asset owner's ability to better control the investment risk of the overall portfolio.³

Why Do Benchmarks Matter?

Without benchmarks, each of these basic investment activities would suffer. In order to create truly diversified portfolios, select funds, evaluate performance and manage risk, benchmarks help us define in a very practical way the various parts of the investment universe. For example, an inaccurate benchmark (e.g., a large-cap UK growth stock benchmark that includes small-cap or emerging market stocks) can lead to confusion or poor choices (e.g., inadvertently holding the same stocks in multiple funds). Similarly, to understand the performance of a fund the benchmark used to evaluate it must be consistent over time. If the benchmark is inconsistent (e.g., the UK growth stock benchmark drifts back and forth between value and growth stocks), then the investor will have no way of knowing whether the fund's performance – good or bad – is due to benchmark drift or some other reason. In addition, a benchmark should aspire to be fair to all benchmark users by attempting to balance competing interests. It must, for example, treat mergers and acquisitions, dividends and price changes in a way that doesn't advantage one type of investor (e.g., large institutional) over another (small individual).

³ The International Organization of Securities Commissions (IOSCO 2013) and the European Securities and Markets Authority (ESMA 2013) have provided definitions as part of separate reports on financial benchmarks. These reports similarly define benchmarks as commercial prices, rates, indices or figures that are made available free of charge or for payment and are calculated periodically, entirely or partially by the application of a formula or another method of calculation to, or an assessment of the value of, one or more underlying assets, prices or certain other data, including estimated prices, rates or other values, or surveys. They are used for reference for purposes that include (1) determining the interest payable, or other sums due, under loan agreements or under other financial contracts or instruments; (2) determining the price at which a financial instrument may be bought or sold or traded or redeemed, or the value of a financial instrument; and/or (3) measuring the performance of a financial instrument. For the purposes of this paper on benchmark best practices, we would emphasize investability, replicability, independence, fairness, transparency and other benchmark characteristics – as well as uses, such as asset management and portfolio strategy – that go beyond these more transactional definitions and uses.

And a benchmark must be transparent so that all investors can understand why it behaves the way it does.

Industry leaders have recently expressed interest in identifying the best ways to achieve benchmark accuracy, consistency and fairness so that any investor – institutional or individual – using benchmarks can do so with full trust and confidence. However, while many providers make detailed descriptions of their benchmark methodologies readily available, up to now there has been no overall assessment of current benchmarking standards or best practices (Agather 2012; Bell 2003). This paper aims to provide a framework for such an assessment. While this framework is grounded in experience in constructing and maintaining equity benchmarks, some of the best practices it contains can be seen as applicable to other asset classes. Specific structural limitations in other asset classes and markets – such as the absence of independent exchanges – can affect the ability of benchmarks to achieve certain aspects of these best practices, but as these markets develop, benchmark providers can aspire to them.

The Benchmarking Best Practice Challenge

Any assessment of benchmarking practices must acknowledge the many dimensions of benchmarks and benchmarking. Along one dimension, the proliferation of investment asset classes has been accompanied by, and sometimes driven by, the creation of an extraordinarily wide range of benchmark categories built with different methodologies in order to capture the unique features of those asset classes. Understandably, depending on which asset class a benchmark is designed to capture, it may have different purposes, data types, collection methods and index calculation approaches.

A second dimension of benchmarking involves methodological and operational challenges. The proper provision of benchmark indices can entail measuring and reporting on anywhere from a few to hundreds or even thousands of individual constituents, all of which can change frequently. The process for collecting this data in a timely fashion, applying a benchmark calculation and reporting the results, must be consistent, understandable and open to scrutiny.

A third dimension concerns the relationship between a benchmark's purpose and the process used to create and maintain it. For example, certain interest rates, such as LIBOR/EURIBOR, differ from the benchmarks that MSCI and other benchmark providers calculate for equity markets. With LIBOR/EURIBOR, the data is based on select estimates, provided by market participants, of the price at which interbank lending might take place. Because the data is based on estimates and the number of data points is low, any estimate can have a direct impact on the ultimate LIBOR/EURIBOR rate. Moreover, the process is open to conflicts of interest because individuals and banks can benefit directly from their own estimates. In contrast, when the data used to construct benchmarks are the documented prices of actual transactions in the marketplace and those data points are then analyzed using well-known rules by third parties who are indifferent to market prices, there is less chance for conflicts of interest to play a role in the outcome.

In striving to fulfil many needs simultaneously, benchmarks are exposed to tradeoffs and potential conflicts. In fact, in the final analysis, the quality of a benchmark really depends on how successful it is in striking the right balance between the various conflicting investment needs and objectives.

More generally, best practices in benchmarking should reflect five critical aspirations that support a benchmark's benefits to investors. A benchmark should:

Accurately and objectively reflect the full set of investable opportunities for a well-defined asset class, whether that is in equities, fixed income, or alternative securities (public or private);

Be *replicable and investable* so that an investor choosing the benchmark can be assured that the actual behaviour of the asset class is reflected;

Be *current and reliable* in that it remains consistent and up to date;

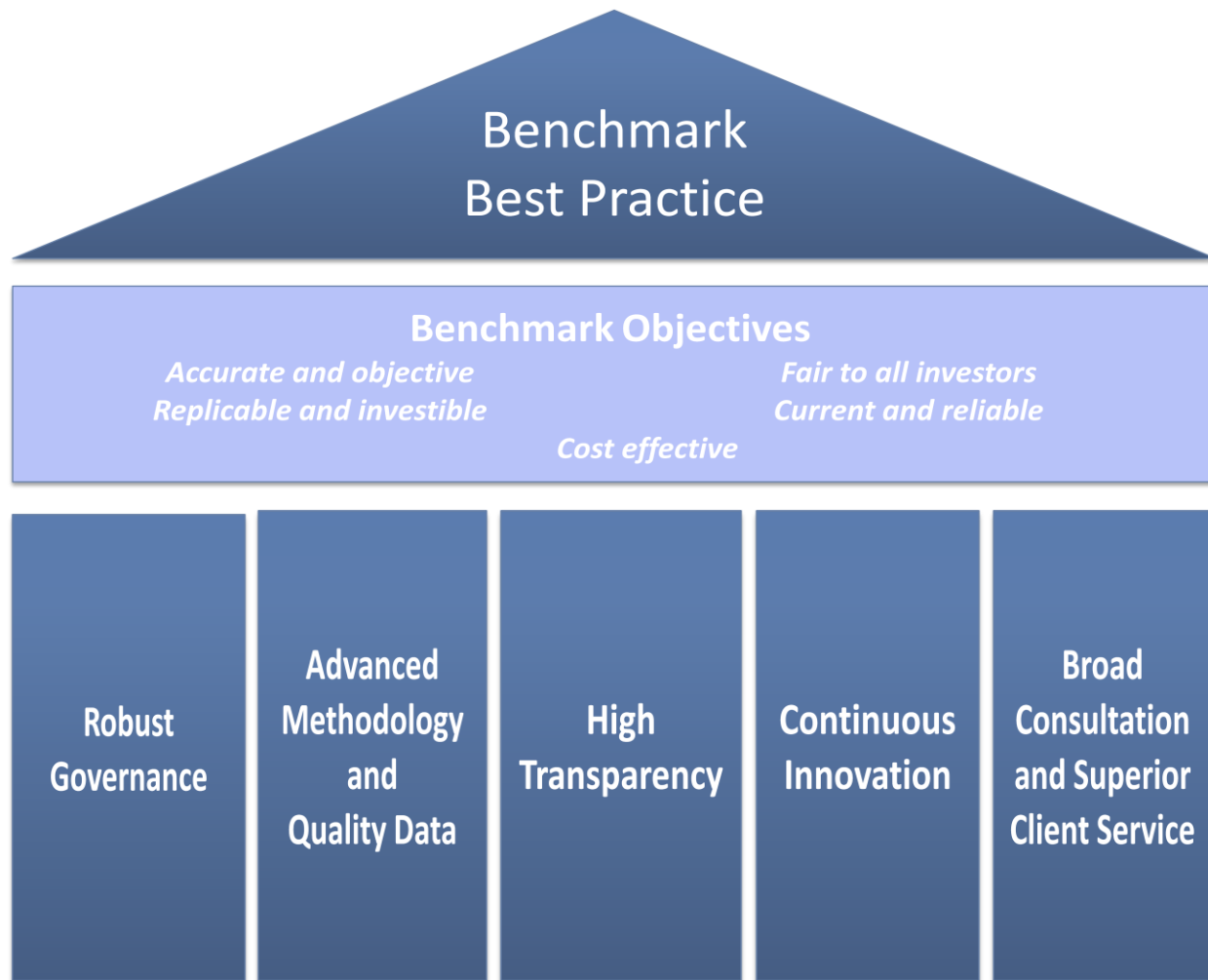
Balance the interests of all users; and,

Seek to *minimize the costs of replicating* that benchmark in order to support investment efficiency.

Five Best Practice Pillars

In realizing these aspirations, benchmarking best practices rest on five fundamental pillars as illustrated in Exhibit 1. These pillars show that benchmarking best practices depend, not just on quality data and advanced methodology, but also on robust governance, transparent processes and products and broad consultation with investors, all of which help to ensure accuracy, replicability, currency, fairness and low cost.

Exhibit 1: Five Pillars of Benchmark Best Practice



Pillar 1: Robust Governance

A best practice governance process must properly balance two objectives: obtaining, analyzing and distributing market information while simultaneously maintaining objectivity and independence from market participants on decisions regarding that information. The governance process focuses on creating and maintaining an organizational structure, including oversight and decision committees, quality assurance processes and other elements of a system that promotes high benchmark quality as well as independence from inappropriate investor influence.

The challenge here is that to construct and maintain a relevant benchmark it is important to know how investors or securities exchanges will use it so that it is responsive to prevailing needs. It is equally important to ensure that a benchmark not only accurately reflects the market it purports to represent, but that it also cannot be used by one set of investors to gain an unfair advantage over others.

Balancing Competing Interests

For example, investors or securities exchanges may differ on which stocks define a market and under what circumstances. In particular, an investment underwriter may have a strong view on how and when a client's IPO or merger with another company should be accounted for in an equity benchmark. Other investors may not have such a vested interest and, therefore, may not share the same view on IPO treatment. In another case, a stock exchange may want to include all of the securities it lists, regardless of whether that list truly represents the relevant market. Or, investors may differ on the criteria for defining value versus growth companies (or a host of other definitional issues). In such instances and in many more, an independent governance process enables the benchmark provider to balance competing interests appropriately as well as to handle issues arising from conflicts of interest.

To play this independent role effectively, benchmark best practices have implications for the overall organization. A broker dealer, investment manager, asset owner, investment banker, or securities exchange that also builds benchmarks runs a constant risk of conflicts of interest or the perception of them. Investors who are also benchmark providers face formidable challenges in building convincing walls between the investment/exchange and benchmark businesses. Standalone benchmark providers do not face these potential conflicts. Where it is not possible for a benchmark to be provided by a standalone organization, there should be thick, high walls between trading and asset management on the one hand, and benchmark policymaking and execution on the other hand.

In the same vein, investors and data providers who deal with standalone benchmark providers do not have to question whether investment or securities information is being used by another part of the organization with different objectives or interests. Nor do they have to deal with more than one entity responsible for index production. When there are separate entities providing the index methodology and the calculations based on that methodology, it is difficult to know where to turn when explanations need to be provided or errors need to be corrected. In these cases, explicit and documented walls need to be erected and maintained so that the parts of the organization responsible for the benchmark can operate without the perception of the potential for interference by other units with different interests and responsibilities.

A good governance process also involves at least two other elements. First, there should be no ad-hoc rebalancing or stealth methodology changes; all rebalancing and methodology changes should be widely communicated before they take place. Second, governance best practices require experienced decision committees to ensure oversight and validation of the many complex issues that come up in benchmark

construction and maintenance. Above all, the process and key decisions should not depend on a single person so that all sides of an issue are fully explored before decisions are made final.

Internal Index Committees

The role of internal committees is one of oversight, ensuring that final decisions are consistent with the benchmark methodology and that, in complex cases where different interpretations are possible, the right focus is applied. Exhibit 2 provides an example of a structure that divides these responsibilities among four types of committees depending on the types of expertise and judgment required.

Exhibit 2: Example of Index Committee Structure

Universe Management Committee <i>Evaluate constituent level data points</i>	Global Constituent Committee <i>Address complex corporate events</i>
Equity Index Committee <i>Review and approve index level methodology</i>	Index Policy Committee <i>Make policy level decisions</i>

Decision committees should be internal in nature to ensure that each important index decision is given suitable attention, that all relevant points of view are aired, that no one person controls an index decision and that decisions are made efficiently and in an orderly fashion. External committees formed outside the benchmark provider run the risk of being populated with members from the very organizations that might benefit from the decisions they make. Committees that are internal to the benchmark provider prevent such conflicts.

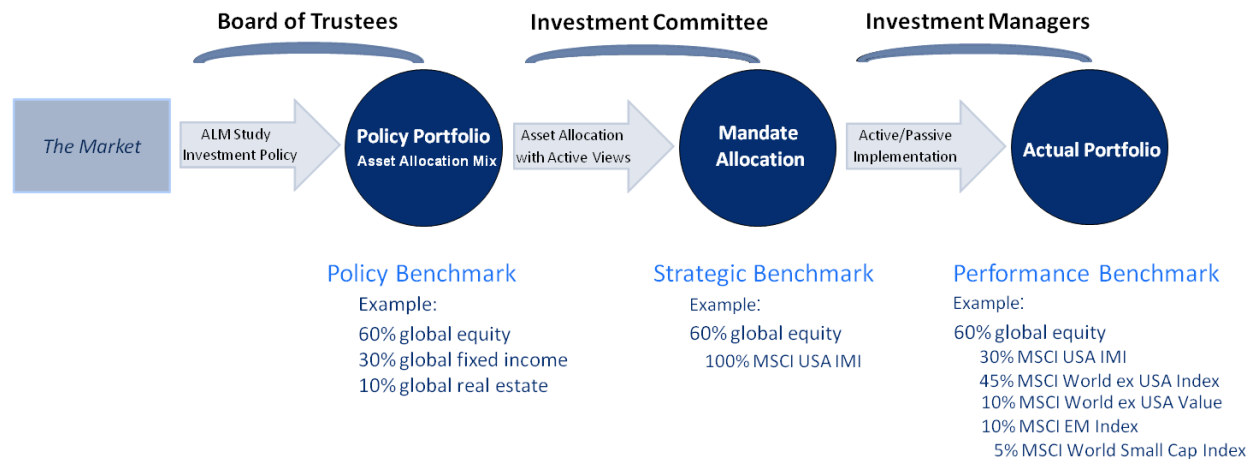
Similarly, the index committees and the research needed to support them should be walled off from other activities contained within the benchmark provider. Decisions regarding index constituents, corporate events, benchmark methodology and construction should all take place behind a wall that excludes staff concerned with sales and marketing. This protects price sensitive information and ensures that it is available only to a small number of people on a need to know basis.

Certain benchmark decisions require market participant feedback which should be collected through a public consultation process (more on this below in the discussion of Pillar 5). In some cases this may be a regular process, such as an annual market classification review in which countries are reviewed for potential reclassification from emerging markets to developed markets status, or vice versa. In other cases, consultations are ad-hoc, addressing a specific methodological topic. Final decisions, once all feedback is reviewed, should be made by a relevant index committee rather than by an individual to ensure a full airing of all considerations and views.

Investor Governance

While governance practices are critical to the benchmark provider, they also apply to investors. Benchmarks are an important tool for investors for defining the investment process and the responsibilities of investment participants. Exhibit 3 shows a hypothetical investment process at a pension plan with the division of responsibilities among a board of trustees, an investment committee and the investment managers. Benchmarks play a key role at each level.

Exhibit 3: Hypothetical Pension Plan Investment Process



The board of trustees is responsible for setting an overall policy benchmark, including a broad asset allocation and risk budget. In this illustration, we use a simple 60/30/10 equity/fixed income/real estate policy portfolio. The internal investment committee, chaired by the CIO, creates a strategic benchmark, in this case delineating the specific geographic mix of benchmarks that go into the 60% global equity allocation. Finally, the investment committee assigns to each investment manager (internally or externally selected), a performance benchmark based on the strategic benchmark and a risk budget (e.g., a tracking error band relative to the benchmark) against which to manage an active or passive portfolio. Oversight can then be exercised by reviewing actual performance relative to the performance benchmark, the strategic benchmark and the policy benchmark, respectively. The division and careful definition of responsibilities as exemplified by benchmark selection at each stage of the investment process allows for allocation decision making and oversight that are central to investment governance. It should be noted that individual investors should follow a similar process of creating specific investment goals and benchmarks against which to manage their own portfolios.

Pillar 2: Advanced Methodology and Quality Data

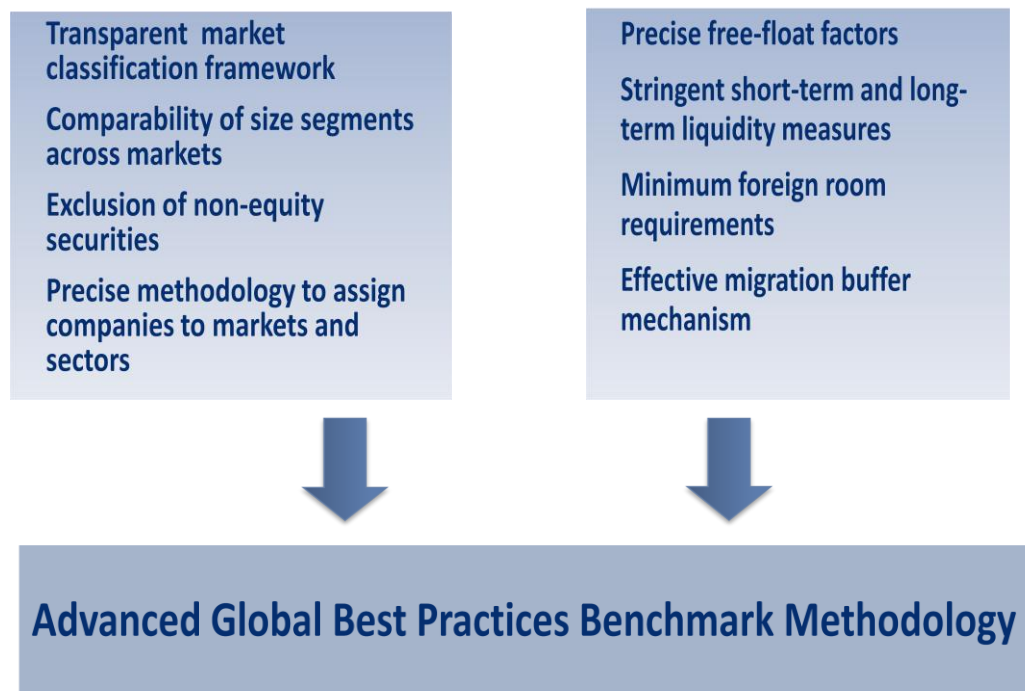
Advanced methodology and quality data are both crucial to building benchmarks that are representative, accurate, timely and cost efficient.

Advanced Methodology

Methodology best practices require a set of rules grounded in research that clearly state how each index category – country, region, sector, style, risk premia index – should be defined, what securities should

be included and, if so, how each security should be assigned within those categories. These assignments will depend on location, history, ownership, size, style and other key measures. And those rules should be applied consistently across all categories and securities.

Exhibit 4: Elements of Advanced Global Benchmarking Methodology Best Practices



The central methodological challenge for benchmark best practices is how they solve for key tradeoffs between four sets of competing objectives. The quality of a family of benchmarks depends on how successful they are in striking the right balance between each pair of objectives.

- Broad market representation and investability.** To properly cover a market (global, regional, country, size, style, etc.) a benchmark must include as many stocks as possible that are appropriate to that category. Omitting securities arbitrarily or systematically runs the risk of degrading the representativeness of the index. However, a benchmark must also be investable, meaning that an investor must be able to obtain and dispose of (purchase and sell) the securities in the index without incurring excessive transactions costs. For example, for any market, benchmarks that follow best practices should include as much market cap as possible. This can be achieved by adopting a percentile approach (e.g., through to the 99th percentile for developed markets) and not be defined simply by a fixed cut-off or minimum cap size (e.g., any stock with market cap over \$100 million). The benefit of the former approach is that it moves automatically with changes in the market size while fixed cut-offs require periodic adjustments. In addition, percentiles lead to consistent coverage across markets while fixed cut-offs lead to very different coverage proportions across markets. Also, a benchmark should establish precise, simple minimums for what proportion of a company's securities are truly available on the open market. They should, for example, define free float standards (e.g., 5% bands), as well as multiple short-term and long-term liquidity measures (e.g., 3-month and 12-month Average Traded Value Ratio or ATVR) so that investors are confident as to which securities are accessible, which are excluded, and why. For foreign investors who need

meaningful access to a market, its benchmark should include minimum limits (foreign inclusion factors and foreign floors) for securities that are available for foreign purchase.

- **Country coverage and market accessibility.** Country markets are the basic building blocks of global or regional benchmarks. The goal of a multi-country benchmark (e.g., covering developed markets, emerging markets, Europe, Asia, etc.) is to group together country markets that are similar to each other and to separate markets that are dissimilar (Broby 2011). Grouping criteria should include a country's level of economic and financial market development as well as the investor's actual experience in gaining access to that market. In terms of market accessibility, some highly developed economies have markets that impose significant restrictions on external investors (e.g., currency and capital repatriation restrictions), while others at a similar level of economic development do not. Benchmarking best practices should define not only minimum economic development standards, but also minimum market accessibility requirements. A country that fails minimum economic, financial or market accessibility standards should not be grouped with those that pass them.
- **Global integrity in style and size segmentation and diversity in market structures.** The distribution of company capitalization varies from market to market. Therefore, using the same company size cut-offs and market coverage targets to create benchmark size segments is not feasible. Countries, regions and sectors also vary in terms of their size, style (e.g., value versus growth) and the number of companies they contain. For example, the number and average size of companies in the Hungarian market may be markedly smaller than in the German market. On the one hand, benchmarks require precise rules that assign companies to size, style and sector categories. On the other hand, they need to account for a range of differences among countries in size distribution and other characteristics. Best practices rules include cut-offs that blend absolute value with minimum and maximum percentage coverage. A global minimum size reference and market target coverage ranges should be used to strike a balance between the twin objectives of size integrity and market coverage. The intersection of the minimum size range with the coverage range describes a size and coverage target area which can be used to find a balance between size integrity and market coverage.
- **Timely market representation and investment efficiency.** Benchmark best practices also take into account the balance between market representation and investment efficiency. This is a tradeoff between the need to recalibrate a benchmark for changing constituents and other characteristics and the need to limit transactions costs for investors. If cost were no object, then a benchmark would instantly adjust in response to an IPO or a company's shift in size, style and any other key characteristic. However, such an immediately reactive benchmark would impose unsustainable costs on investors attempting to track that benchmark. They would need to execute rapid, substantial purchases and sales as well as increase their tracking error given their inability to adjust the portfolio in real time. Benchmarking best practices to limit turnover call for periodic rebalancing (e.g., twice a year) to prevent a benchmark from retaining stale data, but which are not so frequent as to require constant turnover. Benchmarking best practices in this area also call for transparent rules governing the inclusion of major IPOs after a reasonable time has elapsed (e.g., 10 days) so that investors can avoid purchasing shares during a period of IPO-inspired turbulence. Finally, they also call for creating reasonable "buffer zones" for those securities that may be poised to move from one category (e.g., size) to another. Buffer zones or percentage bands around category cut-offs

prevent investors from having to sell, buy and possibly sell again as a security bounces between categories.

Striking the right balance between these four key tradeoffs enables the investor to gain access to a target market in an efficient manner. Employing the right methodology can not only help avoid benchmark misfits (gaps and overlaps) and inaccuracies, it can also save investors from needless transaction and tracking error costs.

Quality Data

The best methodology alone cannot guarantee best practice benchmarks. High quality data are the vital inputs to any methodology and poor data tells the age-old story of garbage in, garbage out. Maintaining high standards in this arena require the benchmark provider to create and manage robust technology and business continuity processes to meet standards of near-perfect timeliness and reliability in supplying benchmark information to investors.

For example, a global equity benchmark provider may calculate in excess of 150,000 daily indices and over 8,000 indices in real time. These must be distributed to thousands of clients within strict deadlines shortly after market closings (or, for real time indices, up to every 15 seconds). And calculating these indices involves integrating data covering tens of thousands of securities across 75 countries from at nearly 200 sources (e.g., stock exchanges), all validated with cross checks. Each month, global equity benchmarks must also assimilate hundreds of corporate events (e.g., mergers and acquisitions) and thousands of fundamental data updates, dividend reinvestments and float updates.

Exhibit 5: Volume of Global Benchmark Data Volume and Required Accuracy

Global Market Data Type	Volume Processed	Required Accuracy Rate
corporate events	650 per month	>99.5%
dividends reinvested	3,300 per month	>99.5%
fundamental data updates	3,900 per month	>99.5%
float updates	2,000 per month	>99.5%
securities prices	24,000 per day	>99.5%
securities identifiers	95,000 per day	>99.5%

For these thousands of data points – from validating a single security price to delivery of complex market benchmarks – industry best practices are at the point where investors now expect over 99.5% accuracy and nearly 100% on-time delivery within strict daily or real-time deadlines. To achieve these

standards, a benchmark production system is required to operate six days a week, 24 hours a day, with a minimum of two levels of redundancy in the following basic benchmark production unit components:

Exhibit 6: Benchmark Production Unit Components

Firewalls	Clusters	Databases
Networks	Storage	Power

All benchmark production data should be backed up using a data center as well as locally using either traditional tape media or virtual tape library technology. Benchmark production data centers should be fully redundant, geographically diversified and regularly tested to eliminate the impact of any single point of failure in critical systems or processes.

While these practices can improve the quality of benchmark information provided to investors, data quality also depends on contractual relationships that assure a constant supply of in-depth, valid, reliable information about trades and events from markets around the world. In the case of equity markets, a large portion of this data is supplied by exchanges, which are responsible for ensuring the accuracy, reliability, and timeliness of the underlying stock transactions data they supply to benchmark providers. Benchmark providers can and should take steps to validate this data and to encourage data suppliers to improve quality, but do not themselves ultimately control the systems needed to ensure the quality of the inputs.

In consideration of the resources required to create, maintain and distribute benchmarks, how should the resulting indices be distributed? Most index providers make certain benchmark data available to their clients. On many benchmark providers' public web sites, for example, one can get daily index values and some historical index value and performance numbers for internal use. Beyond this, however, benchmark providers need to cover the cost of obtaining data, calculating benchmarks, maintaining systems, distributing benchmarks and innovating. Some, such as exchange-based benchmarks, are supported by trading fees. Independent benchmark providers commonly charge fees for detailed constituent-level data and for benchmarks used by firms in managing assets.

Pillar 3: High Transparency

It is not enough for a benchmark provider to create and maintain an independent governance structure and advanced methodology that appropriately balances the critical tradeoffs that support data quality and efficiency. Beyond that, high transparency best practices means that investors can fully understand a benchmark's purpose, strategy, design, methodology, behavior and the processes used to create, maintain and govern it. For example, benchmarks should be replicable because they are based on rules that are published openly; the structure and processes for creating the benchmark rules are clear, understandable and well-known; and the benchmark provider invites customer queries so that ambiguities and new issues can be analyzed, answered and incorporated into the benchmark methodology and explained to the satisfaction of the users. Appropriate documentation, for example, can run to nearly 100 pages of explanation (e.g., MSCI 2012). Ultimately, investors should be able to

clearly understand the benchmark and the benchmark processes using publicly available information about the rules and processes.

In some cases, investors have decided to create their own “in-house” benchmarks.⁴ While such “self indexing” can seem attractive for reasons of headline expenses and institutional control, it can lead to dysfunctions that can be traced to lack of transparency regarding potential conflicts of interest. For example, many self-indexing organizations may rely on internally generated, even undisclosed, constituent prices rather than on prices generated by a third party. This lack of transparency may limit the ability of other investors to fully understand the benchmark and whether internal pricing has affected its performance. Further, in-house benchmarks may be designed to be easy for the provider to track, but may be suboptimal for other investors due a lack of understanding or hidden costs. Finally, the self indexer may find it difficult to resist incentives to create or interpret rules in a way that inappropriately boosts performance.

Transparency has another dimension, which is linked to protecting fund managers who passively track the benchmarks from opportunistic traders who want to front run the fund (also called “index gaming”). A benchmark provider is responsible for making the benchmark construction and maintenance processes transparent, including public dissemination of benchmark methodology rule books that define index membership and management with enough specificity that investors will understand what they’re buying and are measured against. The provider is also responsible for ensuring that opportunistic traders will be unable to front run the passive funds that replicate the indices. Benchmark practices that can be used to reduce or mitigate front running include the following:

- Reflecting changes in the equity universe (e.g., smaller IPOs) on an ongoing basis;
- Implementing benchmark migrations due to performance only during scheduled benchmark reviews;
- Spreading changes derived from benchmark reviews over several days/weeks (e.g., implementing 1/10th of the total weight change each day); and,
- Establishing a period of time between a change announcement and the implementation date.

The more notice a benchmark provider gives market participants on any benchmark changes, the more flexibility investors have to prepare. Typically this means that when an announcement is made for a major change in benchmark methodology, such as changing the classification of a country from emerging to developed markets, more than one year’s advance notice would be required so investors can prepare for the change. Of course, time frames can be shorter for smaller changes, such as regular index rebalancing and corporate event implementation.

Supporting both advanced methodology and quality data require a significant investment by the benchmark provider and continuing expenses. As a result, the benchmark provider must strike the appropriate balance between making benchmark results widely available and maintaining proprietary access. This can be done by publishing overall benchmark-level results as soon as they are available, while to some extent initially limiting access to constituent-level results.

⁴ Here we distinguish “self indexing” from index replication. Replication, which we discuss elsewhere in the paper, refers to an investor who forms a portfolio of securities that as closely as possible mimics or matches the behavior of the reference benchmark. Benchmark replication requires knowledge and adherence to best practices of portfolio construction, trading, rebalancing and other complex activities so as not to incur excessive transactions costs and tracking error relative to the benchmark. Benchmark providers can enhance replicability through high transparency and advanced methodology, among other things.

Pillar 4: Continuous Innovation

While benchmarking best practice emphasizes careful control of methodology, processes and transparency for accuracy and consistency, they also require innovation to ensure improvement in those areas. Choices available to investors increase as new benchmarks are created and current benchmarks are improved to reflect the changing investment opportunity set and changing views of investing.

The very evolution of investing illustrates the importance of benchmark innovation. More than 100 years ago, equity investors focused largely on individual stocks, often large-cap stocks within their home country. And due to communication and computation constraints, benchmarks at the time were also narrowly concentrated and price weighted. Over the last 100 years, as technologies have advanced and investors have become increasingly portfolio-oriented, they have widened the focus of investing to encompass different capitalization sizes (mid-cap and small-cap), geographies, sectors and styles. Benchmarks have both followed and led many of these changes, and best practices have evolved to include capitalization weighting, successive expansions of the universe of available securities and asset classes, a host of methodological advances and, today, an advanced investment framework that enables an investor to gain access to a truly global investment opportunity set. Innovation and evolution in indices that assist the international investment management process is required since the index needs of investors seeking international diversification have evolved over time (Sauter 2002). The enhancements in the index methodology address the continued evolution in the investment management process of the global investors.

Exhibit 7: Evolution of Benchmarking Best Practices: Global Equity Investment Framework



Without understanding innovation as an integral part of benchmarking best practice, indexing would become stagnant, unable to keep up with changing investment practice.

Building innovation into benchmark best practice means that the benchmark provider must allocate resources for research into new products and existing benchmark improvements and to create and maintain processes for reviewing, approving and implementing the results into the index production and maintenance process.

One common issue that benchmark providers face as part of disseminating benchmark innovations and methodology enhancements is to respond to requests for back-calculated indices that reflect the innovation (either for an entirely new benchmark or an enhancement to an existing index). Investors consider back-calculation to be an essential requirement as it enables them to understand enhancements and how they might represent an improvement over the current or old methodologies. For newly launched indices the historical behavior of the back-calculated indices is crucial for investors in deciding whether to adopt it for benchmarking purposes.

Should back-calculated or simulated indices be treated as official indices while preventing benchmark providers from data mining to create benchmarks that show better performance than competing indices? Benchmarking best practices should specifically address this question by requiring providers to be responsible to show data with complete accuracy and over long periods of time to avoid any ambiguity and randomness about the selection of data or period for which the analysis was provided. Best practices would also require that back-calculated indices should be free of any survivorship bias.

More generally, innovation is closely tied to experience in that a benchmark provider with long experience should be able to balance the need for innovation with consistency of methodology and governance, as well as the ability to provide historical data and documentation.

Pillar 5: Broad Consultation and Superior Client Service

Broad Consultation

We have seen that independent governance is critical to benchmarking best practices, but so is broad consultation with the investment community regarding benchmark methodologies and applications. Customer consultation provides the essential feedback loop for increasing transparency, providing access to data and fueling innovation. Along with customer service, it facilitates accountability to benchmark users and essential communications.

Specifically, consultation enables the benchmark provider to retain its objectivity and independence, but at the same time to gather information about benchmark design and use as well as to convey the results of its deliberations and its reasoning. The objective, then, should be to design consultations so that they encourage input from benchmark users, regular sharing of information and explanations from the benchmark provider and the retention of decision making by the benchmark provider. Structured dialogue enables investors to share their views on existing benchmarks and benchmark practices as well as on potential innovations. In addition, consultations give investors the lead time they need to fully evaluate benchmark changes and their implications. Benchmarks can stay relevant by assimilating the investor experience in managing the investment process. In addition, regular consultations advance transparency by making unannounced rebalancing or stealth methodology changes less likely.

While broad consultation is essential to successful benchmark innovation and improvement, it is important to target the most appropriate users for any proposed change. Exhibit 8 shows the types of interested benchmark users that should be consulted, depending on the potential changes that the benchmark provider is contemplating for an existing benchmark or a new benchmark the provider may be interested in issuing. For example, a potential change in market classification would be the occasion to solicit information and views about feasibility, impact and design from representatives of all of these types, including small, medium and large benchmark users in each category. In addition, circumstances may vary by region, so consultations should usually be global in scope.

Exhibit 8: Sample Benchmark Consultation Matrix

	Region 1	Region 2	Region 3
Asset Owners			
Consultants			
Active Asset Managers			
Passive Asset Managers			
Broker/Dealers			

Consultations with various investors should begin with a general announcement, including a detailed document that describes the issue and in some cases presents either the provider's initial thinking on the issue or a "strawman" proposal designed to elicit feedback from the investment community. The benchmark provider should review comments from all interested parties and, for the more significant consultations, conduct focused interviews with key players.

As a specific example, during the period from 2006 to 2008 MSCI introduced a new comprehensive methodology for constructing global benchmarks. Exhibit 9 lists the steps it took to consult with benchmark users.

Exhibit 9: Consultation Schedule for Introduction of MSCI's GIMI Methodology (2006-2008)

Mar 2006	Announcement of a formal consultation on proposed enhancements to the MSCI Standard and MSCI Small Cap Indices that would result in a Global Investable Market Index (GIMI) family of benchmarks. Consultation document outlining and analyzing options made available at this time.
Mar 2006-Nov 2006	Consultation with asset owners, managers, broker/dealers and consultants worldwide.
Nov 17, 2006	Updated consultation document with proposed transition plan
Nov 2006-Feb 2007	Consultation with investors on transition plan
Mar 2007	Announcement of the details of the finalized methodology and transition plan
May 4, 2007	Announcement of the pro forma list of constituents of the GIMI (and Provisional Indices)
Nov 2007	First phase of the implementation of the transition to the GIMI methodology
May 2008	Second phase of the implementation of the transition to the GIMI methodology

Superior Customer Service

Accompanying broad client consultations is superior customer service, both of which are critical to accountability and communication. Benchmarks and their underlying data can and should be made available through multiple channels and in a timely fashion. Benchmark providers should have the capacity to answer client queries, both those that can be answered on the spot (via telephone or email) and those that require research, backtesting and other activities involving commitment of additional resources. They should also be able to take the initiative to alert and educate clients about new research on benchmarks that can inform investment practice, including asset allocation, fund selection, performance evaluation and product creation. Without the commitment to do these things, the knowledge needed by investors to improve the investment process and its practice can remain unknown to them and unused.

Limitations of Benchmarking Best Practices

Tradeoffs between competing objectives are an inherent part of the benchmark construction and maintenance process and the end product. For example, any benchmark methodology that combines clear rules and planned delays in implementing constituent changes provides investors an opportunity to trade in advance of rebalancings and other anticipated benchmark changes. Benchmarking best practices cannot completely eliminate frontrunning, but it can strike an appropriate balance among objectives to minimize opportunities for such behavior (e.g., moving from annual to semi-annual rebalancing) while maintaining quality and efficiency.

Nevertheless, as we have seen, benchmarking best practices acknowledge both competing objectives and competing interests among investors. Benchmark providers must deal with the often controversial issues they may face by committing to independent good governance, clear rules and methodologies, transparency, innovation and consultations with investors.

Conclusion

The five pillars of benchmarking best practices – robust governance, advanced methodology and quality data, transparent process and products, continuous innovation, broad consultation and superior client service – all serve to ensure the strength and credibility of the resulting benchmarks and benchmark-related data. Best practices in each of these pillars contribute to the ability of a benchmark to be accurate and objective, replicable and investable, current and reliable, fair to all investors and cost effective. A weakness in any or all of these pillars can, in turn, reduce a benchmark's capacity to accomplish these objectives. Strength in each of these pillars enables investors to use the resulting benchmarks with confidence for purposes such as asset allocation, fund selection and performance evaluation.

Specific details of benchmark methodology and process are beyond the scope of this paper, but as we have seen in just one example, appropriate methodology documentation, which should be available to all investors, can run to nearly 100 pages. While most investors may not need to concern themselves with many of those details, they depend on them. And they have several implications for investing.

First, best practices are just that: a set of practices that benchmark providers can aspire to and a way of assessing the *relative* quality of benchmarks, rather than an absolute definition of what qualifies as a

benchmark. In other words a benchmark may be higher or lower in quality depending on how closely it adheres to these best practices, but it is still a benchmark if it meets the basic definition.

Second, keep in mind that best practices require sufficient organizational resources in order to set them firmly under the best practice pediment. Best practice is not only a set of rules, but reflects an organizational commitment to getting it right. This means that building and maintaining the required capacity to provide best practice benchmarks is not a trivial pursuit. Significant commitment of resources and considerable experience are required to develop the expertise and consistency needed to achieve best practices. Analyst teams, benchmark committees, information technology, client services and other resources must not only be sufficient in size, but also experienced in broad benchmark philosophy, methodological and process details and customer needs.

Third, the infrastructure and resources needed to produce and maintain benchmarks at a high level of quality and customer service come at a cost, which is also not trivial. While maintaining independence, benchmark providers incur expenses in providing investors with tools that are essential to the investment process and its assessment. In essence, the required resources and ability to recover expenses are integral in that they enable the benchmark provider to adhere to each of the five foundational pillars of benchmarking best practice and to continue to improve them in the future.

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