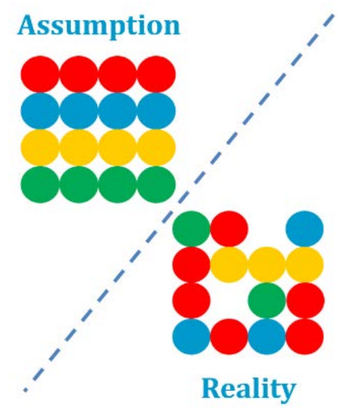
Our Approach to Index Investing

All index investing starts with a simple goal: To neatly define and divide a portfolio's target exposure into a finite number of securities—own 4.1% of security A, own 3.2% of Security B, and so on. With an objective as straightforward as this, one might think there is no need for index fund managers to put energy towards research, no room for clever insights, and no place for any active decisions about managing the portfolio's exposures.

If buying and selling securities was frictionless and the targeted benchmark exposure never changed, index investing would be a true commodity business. In reality, however, neither of these conditions exists.

First, investors incur costs whenever they buy and sell securities—some of which are explicit, and some of which are buried deep in execution prices. Second, benchmark compositions change frequently as companies merge, split, and recapitalize (not to mention when the benchmark rules get a facelift). While these realities can be inconvenient, they also mean that passive index fund management naturally includes opportunities to make active decisions that can reduce implementation costs and tracking error relative to the underlying, shifting constituents and weights of the index. That's why careful and thoughtful decision making within index fund management is paramount to preserving value for investors.



The primary goal of any index fund manager is to track the benchmark, but doing so is not as simple as pressing the "easy" button. At its essence, value creation in any investment comes from the difference between benefits and costs—and for value creation in the passive index investing space, the devil is in the details. At LGIMA, we approach these details in a manner that we believe sets us apart from our peers.

Straightforward and savvy

We seek to provide our investors with attractive returns net of all costs and risks taken in the investment implementation. The simple analogy is that of the straightforward, savvy shopper. We have the shopping list in hand (i.e., the securities in the benchmark) and are sent out with the dollars in our pocket to purchase those items. We approach this task in a straightforward way by ensuring that our only revenue comes directly from performing this shopping service for our clients. In other words, we do not enter into any side deals in order to profit from services associated with the shopping. This could include buying the listed items where we may have discounts or coupons, yet charging the standard market price to our clients. Through our long history in managing index portfolios globally, we also aim to be market savvy—knowing how and where to get the best deals to gain exposure to the shopping list. Below are some examples of this process in action.

Scale and global expertise

LGIMA's scale and deep knowledge of the intricacies of the markets in which we transact are key contributors to keeping costs low. As the fifth-largest index fund manager globally, we can negotiate competitive commissions with our brokerage community, lowering the ongoing transaction costs of participating in these markets. Netting—or the practice of matching internal buyers with natural internal sellers—is also a significant capability and an important tool to help implement efficient index solutions. Whenever cost effective, LGIMA nets internally, allowing clients to save on commissions and other trade related costs they would otherwise have incurred by transacting in the market. Netting is a powerful tool to help clients avoid market impact and the opportunity costs of trading away from the close when there are significant flows.

There is a misconception that maximizing the use of netting is always beneficial to clients. Yet there are times when netting actually can detract value. Take, for instance, when a security is moving from a mid-cap to a large-cap index, such as from the S&P 400 to the S&P 500. Given the number of market participants that would be expected to purchase the security as it enters the S&P 500 Index, its price would likely rise with increased demand. Is it optimal to buy it at the at the market per the index definition? Or, could it be better to purchase it earlier? For this reason, LGIMA preserves our flexibility to make thoughtful decisions around timing, rather than sticking to a hard and fast rule of always netting. We take a deliberate approach by considering the cost and benefits of netting in each unique situation.

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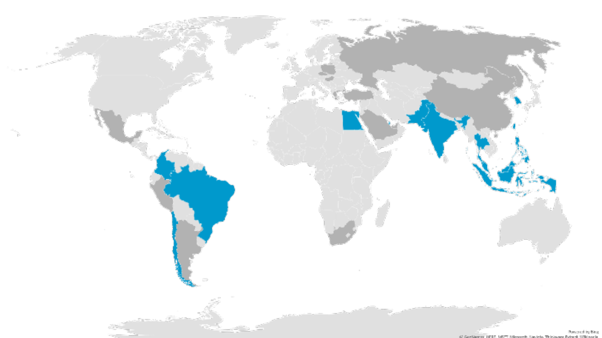
Our global expertise also helps reduce costs and create more optimal outcomes for our investors. Extensive understanding of the complexities in international markets can prove especially valuable in the execution of foreign exchange trades in emerging markets. A large portion of countries (highlighted in dark blue) in the MSCI Emerging Market index impose free trading restrictions on their currencies. In these restricted markets, trades must be executed by a custodian or local sub-custodian. Industry standards for these custodians can create timing mismatches between execution of the equity settlements and the currency exposures, which the benchmark index does not account for when calculating returns. Ultimately, funds face potential currency volatility during that period.

Figure 1: MSCI emerging market countries with free trading restrictions



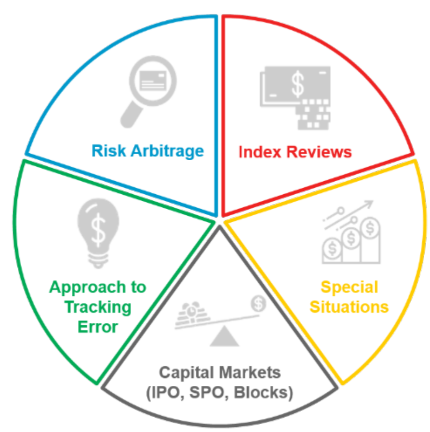
Source: MSCI

For this reason, LGIMA prefers to work directly with unaffiliated custodial networks, adjusting the timeline for FX transactions to align currency trades more closely with the securities trades. Doing so helps to reduce timing risk and slippage between the fund and the benchmark.

Stories from the shopping aisles

LGIMA's decision making process allows us to incrementally preserve value, leading to a consistent historical positive performance; this process includes electing on corporate actions and developing trading strategies in response to index events. The structural realities of indices can create tremendous market pressures at predictable intervals. Prudent index providers can anticipate and benefit from such forces. We thoroughly assess the risk and return dynamics of each opportunity, and believe that maintaining a deep knowledge of each of the markets in which we transact is critical to make these assessments. That's why we place significant importance on research.

The investment team at LGIMA can take advantage of a broad spectrum of events and techniques when looking for global opportunities to add value to the portfolio. The chart below shows some of the opportunities that our team monitors on a consistent basis. The impact of these practices may seem incremental in isolation. However, over time they can add up to material performance pick-ups for our clients without introducing undue risk. Here is a brief discussion of these opportunities.



Capital markets example: stock buybacks

Capital Markets events include IPOs and share offerings where companies look to the market to raise or return capital. Indices will typically reflect these events in their benchmarks at a later period, and participation can offer a value-added opportunity.

Index events such as share buybacks, where companies return value to investors by offering to buy back shares at a premium to market, are one example of how thoughtful implementation can help preserve wealth. Think about the savvy shopper who buys a pair of shoes only to return home to find a coupon in the mail. This rational actor would immediately return to the store, unopened shoebox in hand, to receive the discount. LGIMA works for our clients in similar ways.

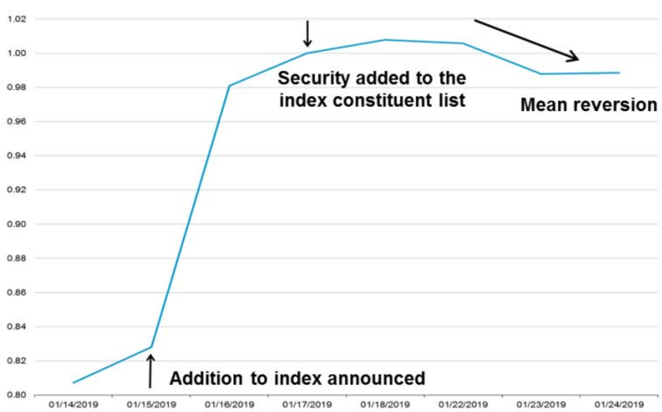
For our index funds that participate in these types of exchanges, we look to tender shares into the index event. We consider factors such as the size of buyback, the current premium, the expiration period, and the stock's volatility. Upon tendering the shares and then reviewing the portfolios risk metrics and implementation considerations, we may then have an opportunity to replace those shares at a discount to the tender price, effectively locking in a gain on the premium.

Index reviews example: index additions
Index reviews are when a specific benchmark or index reconstitutes on a periodic basis. These reviews can provide opportunities to take advantage of temporary price dislocations that can occur, and they help us avoid eroding clients' wealth.

For an index addition, an existing security may be added to an index as the stock meets certain criteria. News of this addition can create demand for the stock, similar to the way a popular chef may talk up an exotic new ingredient—creating a flood of buyers at the grocery store, even if they don't know exactly how to use that ingredient. In both cases, a savvy shopper will try to time their purchases around these events to better manage the market.

In Figure 2 below, we depict the common path of a stock added to an index. The initial jump in price is very difficult, if not impossible, to predict. However, the continued price increase (after the initial jump) prior to the stock's actual addition to the index, and the following mean reversion, is much easier to forecast. LGIMA continuously reviews index changes to ensure we position ourselves around market movements and preserve value for our clients.

Figure 2: Impact of the addition to an index



Source: LGIMA, S&P, Bloomberg.

Special situations & risk arbitrage example: pairs trading
Favorable circumstances may arise during specific M&A events, special situations, multiple share classes, and dual listings. Each of these can provide opportunity to preserve value without impacting the risk profile of the portfolio.

LGIMA aims to know the market and it's pricing better than a contestant on Supermarket Sweep. We use this knowledge to find the most cost-effective way to achieve the exposures on our shopping list by analyzing and acting on any price dislocations. LGIMA can lower costs through thoughtful securities choices that take advantage of highly correlated dual listings and share classes.

Certain equity issuers have multiple share classes in the U.S. market, which trade with high correlation and markedly similar market beta. Using the shopping analogy, imagine that the index tells a shopper it needs to buy a pound of salt and offers two brands in the store. With our knowledge of the markets, we can gain an advantage by purchasing the brand of salt that happens to be on sale that day. Within traditional market-cap weighted indices where multiple classes of securities are constituents of the index, this presents a ripe opportunity to achieve the same economic exposure as the index with some added benefit.

Approach to tracking error example: transaction costs
The objective of index funds is to match the risk and return characteristics of the benchmark. Tracking error measures the difference between portfolio return and benchmark return. We employ value-add strategies not only to keep the portfolio's risk within operating parameters but also to ensure that the costs of running the portfolio don't drag down performance.

A savvy shopper knows that not every purchase is permanent. In some circumstances, they may need to return an item because of an issue with the product, or after realizing they never needed it in the first place. However, with some stores charging restocking fees or only providing returns for store credit, a rational actor will consider how they purchase every item.

Many markets have high capital gains taxes and lower liquidity. LGIMA considers these types of costs when deciding whether an underweight or sale can be made in a substitute security that provides a cost benefit without introducing any material risk. In certain situations, LGIMA may consider using more cost-efficient alternatives than transacting in the constituent securities. Alternatives such as American depository receipts (ADRs), ETFs, or index futures can be effective tools in these cases.

A disciplined approach to minimizing costs defines our entire investment process, including portfolio construction and the optimization techniques that we employ. We aim to reduce turnover and implement efficient trading strategies wherever possible. Instrument selection also plays a significant role in cost reduction. We use a risk management framework that optimizes allocations between various types of securities and instruments that can be used as substitutes to gain the same exposure of the constituent securities in the index with low tracking error.

The risk management difference

Many index investors aren't fully aware of the risks they are exposed to through their investments. These sources of risk include operational risk, regulatory and market risk, execution risk, and portfolio construction risk. LGIMA's approach to mitigating these risks within our index funds incorporates four principles: define, understand, quantify, and control.

Define specific objectives and risk preferences	Understand the investment landscape and relevant rules
Quantify the appropriate trade-off between risk and value	Control and monitor the risk exposure throughout management

We aim to provide our index fund clients transparency around how we determine whether there is sufficient compensation to take a given risk. Transparency is central to our framework (see the first paper in this series, Best Practices in Index CIT Funds), which underscores LGIMA's goal of aligning our interests with those of our clients and reducing the hidden risks and costs facing plan sponsors when choosing an index manager.

Defining and understanding risk is key. Operational risk is especially significant in international markets, where failed trades can lead to onerous charges, fees, and penalties. In Taiwan, for example, a failed trade can result in all associated parties being barred from the exchange for multiple years. Many countries implement foreign ownership limits or capital and foreign exchange controls with which U.S. managers must comply. In such markets, having a trusted partner who can successfully navigate these waters becomes an even more important element of successful index outcomes.

"We are committed to providing index solutions that focus on delivering the best risk-adjusted returns, net of costs, relative to the targeted market benchmark exposure."

LGIMA's disciplined investment process focuses on quantifying and controlling risk. Our risk management framework not only helps us stay within proper risk limits and compliant with fund guidelines, it also helps us identify opportunities to add value. For example, many index providers exercise index constituent reviews on a quarterly or semi-annual basis. This structured timing allows LGIMA to anticipate upcoming changes in index constituencies and look for opportunities to employ some of the savvy shopping strategies described above. We may decide to spread trade execution around the point at which the index change takes place, rather than on the day or at the point of change. Or, we may obtain exposures in other regulated venues and exchanges or in other share classes of the same company, depending on pricing, collateral eligibility, and liquidity. Both strategies have enabled us to maximize returns for clients.

We consider each opportunity on a case-by-case basis through pre-trade analysis in which fund managers and management quantify and assess the intersection of risk limits and potential value created by any proposed strategy. Once trading commences, we employ sophisticated real-time monitoring to alert us to any unexpected outcomes from a trade. Finally, post-trade analysis enables the fund managers and the management team to ensure compliance with Fund Objectives Guidelines and provides valuable feedback to continually improve our risk management process.

Deliberately deciding to add value

Passive index investing is not an entirely passive activity. We are committed to providing index solutions that focus on delivering the best risk-adjusted returns, net of costs, relative to the targeted market benchmark exposure. To do this, we aim to be a straightforward and savvy shopper in the marketplace, making the most of opportunities to reduce costs, mitigate risks and improve outcomes for our investors. Through LGIMA's index approach—grounded in enhanced governance, transparency, and flexibility—we deliver more value to our clients than simply just market returns less costs.

To learn about our approach to index investing or to understand our full suite of capabilities, please contact your LGIMA partner or communications@lgima.com.

For further information about LGIMA, find us at www.lgima.com.