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iSHARES INVESTIGATES: MARKET INDICES AND INDEX INVESTING

Part 2 | Equity index rebalances

Introduction

Market indices are designed to represent and measure the performance of securities in a specific market, asset class, sector, or investment strategy. Indices are financial calculations, based on a grouping of financial instruments, and therefore are not directly investible. Rather, investors seeking exposure to an index often invest through index-tracking mutual funds and exchange traded funds (ETFs), which are generally designed to track the performance of a specified index as closely as possible.

Index providers are responsible for ensuring that the composition of an index adequately reflects its stated methodology. This is done partially through regular updates, or "rebalances," which are changes to an index's holdings and holding weights. Importantly, index fund managers must reconfigure portfolio holdings to match the rebalanced index in order to continue to achieve their index-tracking objective.

This article examines the rebalancing of equity indices and offers insights into BlackRock's process for managing these index events. The takeaway: Thousands of skillful and thoughtful decisions are made behind the scenes in order to seek the precision that our investors expect.

For more information on the role of index providers, see iShares Investigates: Market indices and index investing | Part 1: The role of index providers.

An overview of equity index rebalances

Index providers, such as FTSE Russell and MSCI, are responsible for building and maintaining a wide variety of indices. This includes determinations about how frequently indices are reviewed and updated.

Most index providers rebalance their indices regularly, adding or removing securities or changing the weights of existing index constituents. Indices typically rebalance on a consistent schedule, but the timing can vary by provider. For example, S&P Dow Jones Indices typically rebalances indices on the third Friday at the end of each calendar quarter, while rebalances in MSCI indices occur on the last business day of February, May, August, and November.

Importantly, index rebalances are publicized events and the dates are typically known in advance. For example, on 2 March, 2021, FTSE Russell announced the schedule for its annual reconstitution of the Russell US indices, which occurred on 25 June, 2021.[1]

Index fund managers can receive change notifications from index providers daily. These notifications contain information about upcoming rebalances, methodological changes, and details on how mergers and acquisitions, additions, deletions, spin-offs or any corporate actions may change a security or security weighting in an index.

1 See Press Release, "FTSE Russell announces 2020 Russell US indices Reconstitution schedule", *available at*: https://content.ftserussell.com/sites/default/files/ftse_russell_1q_ipos_2021_russell_recon_announce_march_2021_final_3.2.21_1.pdf?_ga=2.212994964.1021962171.1625611786-448012493.1625611786

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Fixed income vs. equity index rebalances: What's the difference?

Equity and fixed income indices are both used as benchmarks and tracking indices by a variety of investors, but there are notable differences between the two. These differences can impact how investors manage rebalances in index-tracking portfolios.

For example, while the timing of equity index rebalances can vary by index provider, fixed income indices are typically rebalanced monthly to account for new bond issuance, rating changes (upgrades and downgrades), coupon payments, principal paydowns, and bonds with maturities that no longer fall within a benchmark's specified range. Because fixed income indices tend to rebalance more frequently than equity indices, the magnitude of the rebalances also tends to be smaller. This can result in lower trading volumes on the rebalance date.

To offset the potential transaction costs and market impacts of trading fixed income index rebalances, BlackRock portfolio managers can acquire bonds that are likely to be added to the index prior to the rebalance date (by participating in new issues, for instance).

Despite these operational differences, there is one thing that remains the same: Both fixed income and equity index funds are managed by professionals who use human expertise and technology to intelligently pursue a fund's objectives.

Index fund management is anything but "passive"

Although index investing is frequently referred to as "passive" investing, index fund management is a hands-on process. BlackRock Portfolio Engineers (PEs) leverage their deep portfolio expertise and investment skills to consistently seek fund performance outcomes that align with index performance.

Some key elements of the index fund management process include:

- **Benchmark knowledge.** PEs maintain detailed knowledge of index methodologies, predict and project index changes, provide feedback and insights to index providers, and continuously research index events.
- **Portfolio construction.** PEs make investment decisions around portfolio structure (e.g., whether to fully replicate an index or hold a representative sample of index securities) consistent with the fund's stated investment strategy, as well as around cash equitization and corporate actions in index securities.
- **Efficient trading.** PEs build smart trading strategies in an effort to access optimal liquidity.
- **Performance and oversight.** PEs review the cumulative effect of investment decisions to help identify factors that contribute to or detract from portfolio performance.

What is a "Portfolio Engineer"?

At BlackRock, index Portfolio Engineers (PEs) sit at the intersection of portfolio construction, index methodology, trading and capital markets, operational and investment risk, and technology. As such, their role involves much more than what is traditionally referred to as "portfolio management." Functionally, PEs are akin to engineers who understand the importance of design, technology, and market dynamics in the ongoing management of an investment portfolio.

BlackRock's approach to equity index rebalances

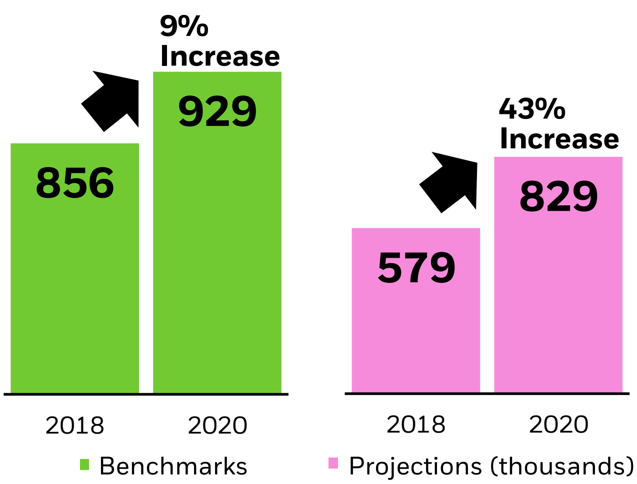
PEs have three primary objectives when trading in connection with index changes for index-tracking portfolios: maintain tight tracking relative to the benchmark index, minimise market impact around the index change event, and minimise transaction costs.

The Index Research Group (IRG) is a team of index methodology specialists who provide insights, analysis, and research on BlackRock's broad suite of index benchmarks. One of the key functions of the group is to create "pro-forma" indices ahead of every rebalance, or provide projections of what an index will look like in the future based on announced index changes. Having a clear view of these pro-forma indices is critical in order to position a portfolio such that it tightly matches the index at the precise moment it changes.

Creating pro-forma indices is no small task. The IRG team managed over 155,000 projections for the May 2020 MSCI rebalance alone. In 2020, the team managed 829,000 projections for the year **(Figure 1).**

Because there are many challenges associated with index rebalances, PEs also monitor funds for upcoming index activity. For example, not only do PEs need to understand the rationale behind index changes (e.g., if there is a corporate action, such as a tender offer, taking place), but in instances where they do not need to trade every index holding, PEs must also generate optimised portfolio rebalance orders in an effort to minimise tracking error and cost. Additionally, PEs need to develop cash-management strategies, especially for portfolios with multi-country exposure in which securities may have different settlement dates and market hours.

Figure 1: Growth in IRG benchmarks and projections[2]



A data-driven process

PEs view each index change as an opportunity to preserve value for portfolios (and investors) in a risk-managed fashion.

To build portfolio solutions for each rebalance, PEs leverage the projections from index providers and evaluate potential trades against a plethora of trading data. Because rebalances are typically announced in advance, there is generally time to complete extensive analysis and actively engage with traders.

In addition to examining portfolio-centric impacts, PEs and traders also consider the broader market ecosystem. For example, PEs headed into a rebalance need to be aware of upcoming macroeconomic events (such as a Fed announcement or a jobs report), corporate earnings releases or shifts in market sentiment that could affect stock prices. To help minimize costs and market impact, PEs must also anticipate the activity of speculative investors seeking to arbitrage and profit from expected changes in the prices of securities being added, deleted or adjusted in the index and evaluate the net flows iShares ETFs and other index portfolios will generate in the index securities.

Figure 2: BlackRock's global index equity platform by the numbers ($USD)[3]

2,000+	Index funds managed by BlackRock PEs
900+	Benchmarks tracked
$4.7T	Index equity assets under management

2 Source: BlackRock. Benchmarks as of 31 December, 2020. Projections as of 31 December, 2020. **3** Source: BlackRock, as of 31 March, 2021.

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Developing and implementing a risk-managed trading strategy

Analysing index changes is just one part of managing an index rebalance. PEs must also use this information to determine the most efficient trading strategy to meet their objectives.

This may involve trading during the continuous trading day (e.g., away from the close) on, in advance of, or after the rebalance effective date. When trading at the close, PEs may utilise limit-on-close (LOC) orders to aim for additional protection against adverse price movements.[4]

In certain circumstances, BlackRock, on behalf of the iShares ETFs, may seek to effect purchases and sales between BlackRock clients (including across iShares portfolios), known as “cross-trades,” if BlackRock believes such transactions are appropriate based on each party’s investment objectives and guidelines, subject to applicable law and regulation. For example, if a stock is being removed from Fund A and added to Fund B, those trades may be offset through an internal crossing mechanism, thus reducing overall trade size and resulting impact on the underlying market.

Importantly, on the implementation date of the rebalance, PEs closely monitor stock prices, bid-ask spreads and the cash needs of portfolios in seeking to achieve successful outcomes for funds and clients.

The bottom line

Index fund management is anything but “passive,” especially when indices are changing. Skilled PEs make a multitude of decisions leading up to and during index rebalances that seek to achieve optimal results. For this reason, BlackRock PEs take a disciplined, pragmatic and adaptable approach to managing index rebalances as they seek to deliver precise outcomes for investors in all market conditions.

4 A LOC order indicates an interest to buy or sell a specific number of shares, but only if the closing price is at or better than an indicated limit price.

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CASE STUDY: ADDING TESLA TO THE S&P 500 INDEX

Introduction

In early November 2020, S&P Dow Jones Indices (S&P) announced that Tesla, Inc. was eligible for inclusion in one of the world's most widely recognised equity indices—the S&P 500.[1]

The stock was added to the index at market close on 18 December, 2020, coinciding with S&P's quarterly December index rebalance.[2] While the addition of a new company to an index is not rare, the inclusion of Tesla in the S&P 500 illustrated the magnitude of scale and complexity that index fund management can entail.

As one of the largest additions by market capitalisation to the S&P 500 index since its inception in 1957, Tesla increased the index's overall exposure to the Consumer Discretionary sector from around 11% to nearly 13%, a meaningful transformation of an index that is largely seen as a proxy for the U.S. stock market. Upon inclusion, Tesla became the fifth largest holding in the index by weight, representing over 1.5% of the overall index.[3]

The impact of index changes on index portfolios

Index change events typically don't just impact one security; they can reflect dozens or even hundreds of additions, deletions and share adjustments, so the scale of activities executed at once can be immense for both the index and the funds benchmarked to it.

For example, the S&P 500 is a widely tracked index, with over $11.2 trillion in assets (roughly $4.6 trillion of which are in indexed assets) benchmarked to it globally.[4] When index rebalances take place, funds tracking the index must adjust the composition of their portfolios to reflect the changes in order to continue to seek their investment objectives.

Executing changes at scale is anything but "passive." Because index changes are implemented using market closing prices on the effective date of the rebalance, indices are not exposed to the same intraday trading dynamics as index-tracking funds. To successfully add Tesla to all BlackRock index mutual funds, ETFs, and Collective Trust Funds (CTFs) that seek to track the S&P 500, while also executing the rest of the December index rebalance changes, BlackRock PEs utilised a multi-faceted index fund management strategy that focused on preserving value, delivering precise performance, and managing against market risks.

Sizing up the Tesla trade

In December 2020, BlackRock traded over $40 billion across its ETFs to account for the compositional changes that took place during the December 2020 S&P index rebalance event. Tesla stock accounted for around 15% of that, with approximately $6.6 billion traded.[5]

SIDEBAR

Dynamic trade execution

Index changes (and, as a result, index portfolio adjustments) can take place on a single day or in tranches over several days. BlackRock's PEs and traders closely evaluate a number of key variables such as liquidity, price, and price volatility until the effective date of the index rebalance.

These factors are reviewed at the security level and the portfolio level to manage any market impact that could arise from the volume of trades made during index rebalances, potential liquidity challenges of trading some of the impacted securities, and costs associated with trading and turnover. Because a fund's performance is measured by its ability to track its underlying index, maintaining cost parity to the index price during rebalance events is critical. Index prices assume frictionless markets, which means that trading costs aren't considered. BlackRock's PEs and traders therefore leverage a range of complementary trading strategies to seek smooth and efficient execution in line with index prices.

To assess the cost of executing the S&P 500 index rebalance trades in the relevant funds, BlackRock's traders estimated the available market-on-close[7] liquidity of the stocks they needed to trade.

In the case of Tesla stock, cross-trading was used to reduce the overall impact of BlackRock's trading activities on the underlying market and to minimise portfolio transaction costs.[8] By enabling a significant amount of potential trading activity to be exchanged in the regulated cross, there was no trade impact in public markets in terms of bid/ask spread. This translated to cost savings for investors in the funds involved.

In addition to intraday monitoring, a limit-on-close strategy allowed PEs to limit the potential costs associated with trading frictions, such as rising stock prices, and achieve pricing in line with the index price by market close.[9]

Data-driven preparation

To maintain fund performance, it is critical for BlackRock's PEs to execute trades in a timely fashion (based on the effective date of the index rebalance) and keep fund strategies aligned with their underlying index. Therefore, PEs rely on projections informed by the pro-forma index data from BlackRock's Index Research Group, along with a host of other security- and portfolio-level data points, to model and design different potential portfolio outcomes in preparation for executing portfolio changes.

Because of the size of the December rebalance and the market volatility around the Tesla announcement,[6] BlackRock's PEs carefully evaluated a number of key factors including:

- How the equity weight adjustments and new index profile might impact the risk, return, and composition of the portfolios tracking the index
- How Tesla stock had been trading (e.g., price and volume patterns) ahead of the index rebalance effective date
- How much Tesla stock was available to trade and at what price

Reviewing these details helped BlackRock PEs ascertain what other stocks would need to be bought and sold to ultimately arrive at a portfolio composition that aligned with the post-rebalance benchmark. BlackRock's PEs coordinated with teams across the firm, including research, trading and risk management, to manage a range of pre-, during, and post-trade activities as they aimed to deliver efficient tracking of the index.

Conclusion

By taking a data-driven, dynamic approach to managing the December S&P 500 index rebalance, BlackRock teams leveraged their deep portfolio expertise and investment skill to achieve fund performance that was aligned with index performance. They also preserved value by delivering precise outcomes for investors.

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Case Study Endnotes

1 After a security meets the financial viability requirement (positive current earnings and consistent cumulative positive earnings over the most recent four quarters of the year), the S&P Index Review Committee still has discretion over whether and when a security will be included in the index based on its own analysis of the company. See the S&P 500 Index Brochure, available at: https://www.spglobal.com/spdji/en/documents/additional-material/sp-500-brochure.pdf. Tesla reported five straight quarters of profit through Q3 2020. As of 31 December, 2020. Source: Reuters.

2 In addition to the S&P 500, Tesla was added to a number of other S&P global indices during the December 2020 S&P index rebalance event. Other S&P indices that added Tesla and are tracked by iShares ETFs include: S&P 100, S&P 500 100% CHF Hedge Index, S&P 500 Capped 35/20 Consumer Discretionary Index NTR, S&P 500 Growth TR Index, S&P 500 Index -100% EUR Hedged (Fixed), S&P 500 Index - 100% GBP Hedged (Fixed), S&P 900 Growth Total Return Index, S&P Global 1200 Consumer Discretionary (Sector) Capped NET Index, S&P Total Market Total Return Index. Source: BlackRock.

3 Upon inclusion, Tesla became the fifth largest company in the S&P 500 (based on combined Alphabet share classes) or the sixth largest if both share classes of Alphabet were counted separately. Prior to the Tesla inclusion event (17/12/20), the index's exposure to the Consumer Discretionary sector was 11.2%. Post inclusion (18/12/20), exposure increased to 12.7%. As of 31 December, 2020. Source: Bloomberg, BlackRock. Subject to change.

4 As of 31 March, 2021. Source: S&P 500® Factsheet - S&P Dow Jones Indices.

5 The total notional traded amount was $43.8B across all (US and UK domiciled) iShares exchange traded funds that sought to track S&P indices during the December 2020 S&P index rebalance event. This included both trading activity for the S&P indices that traded Tesla (see Endnote 2 for list of indices) and for other S&P indices (tracked by iShares ETFs) that were not impacted by the Tesla addition specifically but were included in the rest of the index rebalance-related trading changes. As of 18 December, 2020. Source: BlackRock.

6 For example, on December 18, 2020 (the effective date of Tesla's addition to S&P indices), Tesla stock dropped to a low of $628.54 per share before closing at a high of $695 per share. The prior day close was $655.90 per share. As of 18 December, 2020. Source: Bloomberg.

7 Market-on-close (MOC) orders are trades submitted to execute as close to the closing price as possible. For more information on market-on-close activity, see iShares Investigates: Trading Around the Closing Bell.

8 In certain circumstances, BlackRock, on behalf of the iShares ETFs, BlackRock index mutual funds and CTFs, may seek to effect purchases and sales between BlackRock clients (including across iShares portfolios), known as "cross-trades," if BlackRock believes such transactions are appropriate based on each party's investment objectives and guidelines, subject to applicable law and regulation. For example, if a stock is being removed from Fund A and added to Fund B, those trades may be offset through a cross trade mechanism, thus reducing overall trade size and resulting impact on the underlying market.

9 A limit-on-close (LOC) order indicates an interest to buy or sell a specific number of shares, but only if the closing price is at or better than an indicated limit price.

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