

TAKE A CLOSER LOOK

iShares[®]
by BlackRock

ETF & index fund investment performance

What is investment performance?

Investment performance is how iShares delivers quality to our investors. It's not only how well our index portfolios track their indexes, but also how we're evolving our business to track complex exposures and emerging themes. For ETFs, investment performance also encompasses the market quality of our products, or their ability to offer liquidity, price discovery, and efficient access to markets in varying market conditions.

The investment performance that is expected (or desired) of an index fund or ETF may vary depending on an investor's use case or the product's strategy or exposure. For example, an investor using an ETF as a financial instrument to take a short-term, tactical position may be more interested in the ETF's liquidity than its premium/discount behavior (both of which are components of ETF market quality). Similarly, the investment performance of an ETF seeking to track the S&P 500 may look different than that of a thematic ETF for reasons such as differences in the liquidity and turnover rates of portfolio securities.

As a result, we believe that it is essential that investors have a framework to **consistently** measure investment performance across the ETF and index investing landscape.

How does iShares measure investment performance?

The first component of our investment performance framework is **precision**. One of the most important criteria in measuring the performance of index products is how well they deliver index returns—and their ability to do so consistently over time. This includes assessing how efficiently the funds manage index rebalances to optimize outcomes for investors.

For ETFs, iShares uses a second component to measure investment performance: **market quality**. To measure the market quality of an ETF, it is important to consider metrics that span both primary and secondary market activity.¹ Importantly, these metrics must be studied holistically; when reviewed in isolation, one metric may not tell the whole story.

In this paper, we share our framework, highlighting the importance of market quality and precision in evaluating investment performance and showcasing examples of investment performance in action across iShares products.

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Investment performance = precision + market quality

Precision

One way to evaluate precision is to look at an index fund's **tracking performance**. This can be assessed using two metrics: **tracking difference**, which measures the difference between a fund's return and that of its benchmark index, and **tracking volatility**, which measures the standard deviation (i.e., the volatility) of tracking difference month-over-month.

Consider the iShares MSCI USA Min Vol Factor ETF (USMV), which seeks to track the investment results of an index composed of U.S. equities that, in the aggregate, have lower volatility characteristics relative to the broader U.S. equity market.

USMV exhibited a tracking difference of 16.4 basis points (bps) over a one-year period ending June 30, 2022—a reasonable tracking difference for a fund that seeks to track a non-market capitalization-weighted index, as these indexes generally have higher turnover than market capitalization-weighted indexes. At the same time, USMV exhibited tracking volatility of 1.9 bps, providing consistent tracking on a monthly basis. Compared to the average tracking difference and tracking volatility of five other top low volatility ETFs by AUM, USMV's performance was much more precise (**Figure 1**).

Another way to assess precision is to look at a fund's rebalance efficiency, which measures how the fund effectively delivers index outcomes. Most index providers rebalance their indexes regularly, adding or removing securities or changing the weights of existing index constituents. As a result, index fund managers must reconfigure portfolio holdings to match the rebalanced index in order to continue to seek their index-tracking objective.

Managing index rebalances is a hands-on process. At BlackRock, Portfolio Engineers (PEs) leverage their deep portfolio expertise and investment skills to consistently seek fund performance outcomes that align with index performance. This requires maintaining detailed knowledge of index methodologies, predicting and projecting index changes, providing feedback and insights to index providers, and continuously researching index events. PEs also make investment decisions around cash equitization and corporate actions in index securities, as well as build smart trading strategies in an effort to access optimal liquidity. Importantly, on the implementation date of the rebalance, PEs closely monitor stock prices, bid-ask spreads and portfolios' cash needs in seeking to achieve successful outcomes for funds and their shareholders.

This disciplined, pragmatic, and adaptable approach to managing index rebalances is reflected in the funds' investment performance.

ETF market quality

One way to measure ETF market quality is to look at an ETF's **trading dynamics**, such as its average daily volume (ADV) and bid-ask spread.

Take, for example, the iShares Bloomberg Roll Select Commodity Strategy ETF (CMDY), which seeks to track the investment results of an index composed of a broad range of commodity exposures. Volumes in CMDY rose in the first quarter of 2022, as investors looked to CMDY to manage commodity exposure in a high inflation environment. The fund's ADV increased to \$2.3 million for the first quarter of 2022, nearly 2.7 times its ADV in 2021 (**Figure 2**).

At the same time, the fund's bid-ask spread (a component of an ETF's trading cost) tightened from 51 bps in 2021 to 44 bps in Q1 2022 (**Figure 3**)—an indicator of healthy market quality.

Figure 1: Absolute one-year tracking difference and tracking volatility (bps) for USMV vs. top five low volatility ETFs by AUM²

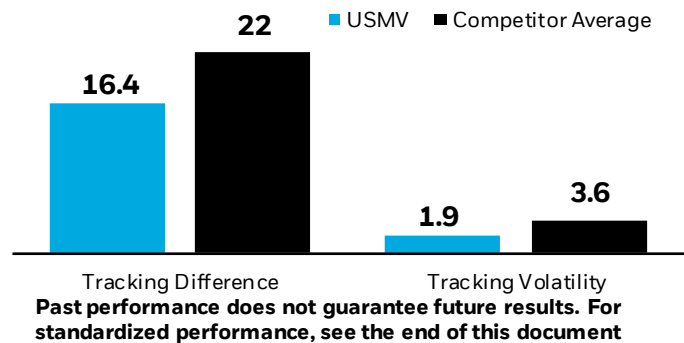


Figure 2: Average ADV of CMDY (\$ millions)³

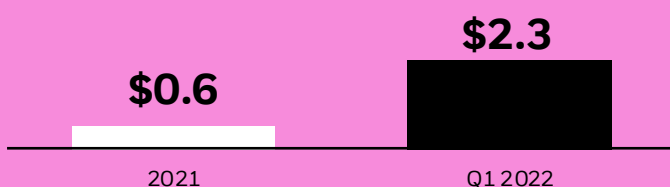
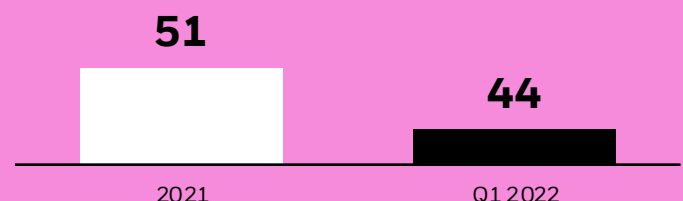


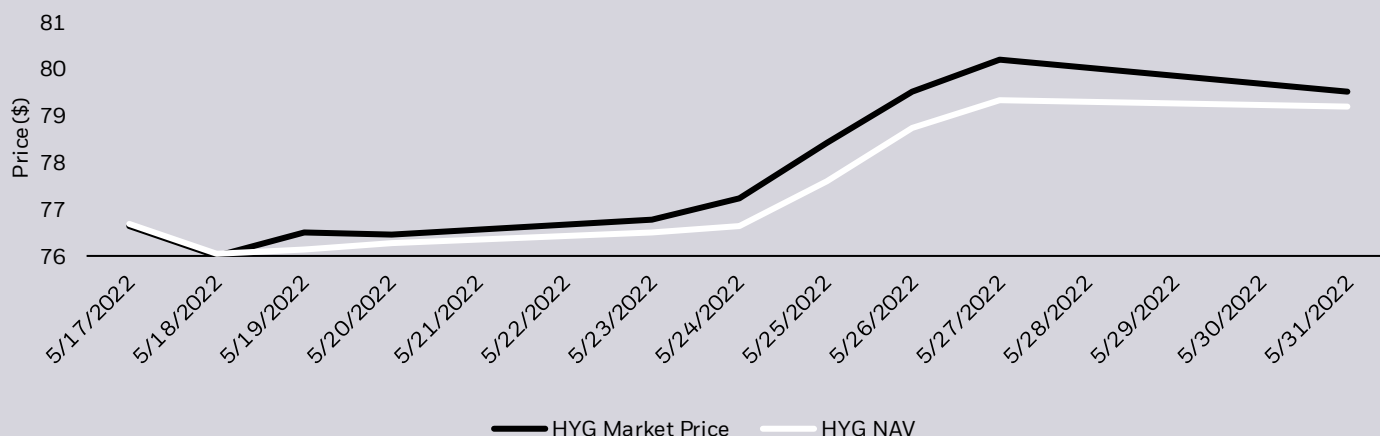
Figure 3: Average Bid-ask spread of CMDY (bps)⁴



Another way to measure market quality is by assessing an ETF's **premium/discount behavior**, which can be indicative of primary market efficiency or the ETF's utility as a price discovery vehicle.⁵ Multiple factors must be considered when evaluating premium/discount behavior, including market conditions and maturity of the underlying market. For example, an ETF trading at a price per share that aligns with its net asset value (NAV) or its intraday net asset value (iNAV) can reflect primary market efficiency in stable or liquid markets, while the appearance of premiums or discounts in ETFs in periods of illiquidity or heightened volatility, or when underlying markets are closed, can illustrate how ETF prices provide price discovery.⁶ Both are indicators of market quality.

During the week of May 23, 2022, the iShares iBoxx \$ High Yield Corporate Bond ETF (HYG), which seeks to track an index composed of U.S. dollar-denominated, high yield corporate bonds, saw persistent premiums appear as a result of large price movements in the high yield sector and low liquidity in the underlying bonds. HYG's price deviated from its NAV, but more accurately reflected the current bond market conditions.⁷ The following week, the premium dissipated as HYG's NAV converged with its market price (**Figure 4**).

Figure 4: Premium/discount behavior in HYG (\$)⁸

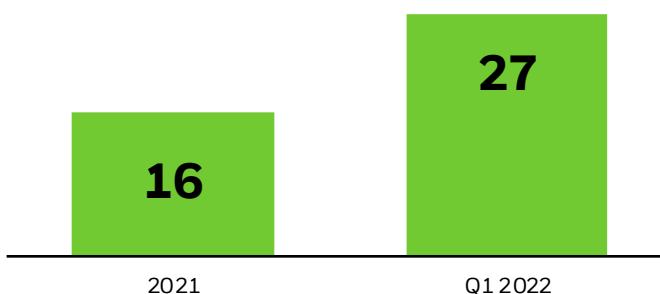


Market quality can also be assessed by evaluating an ETF's **impact on underlying markets**. This can be measured by the ratio of an ETF's **secondary market activity to its primary market activity** (the "STP ratio") and by its **imputed flow**.

For example, the iShares Core MSCI Emerging Markets ETF (IEMG) showed a significant improvement in its STP ratio in the first quarter of 2022. While IEMG took in new assets, its secondary market volume also increased, up 48% from its 2021 average.⁹ Despite the elevated flow, the majority of trading in IEMG took place on exchange.¹⁰ For every \$27 IEMG traded in the secondary market, only \$1 resulted in the trading of IEMG's underlying securities (**Figure 5**). The limited impact of IEMG's trading on its underlying securities was illustrative of high market quality.

The higher the STP ratio, the better the market quality. This is because a high STP ratio suggests that ETF trading is being efficiently processed on exchange with minimal market impact (i.e., shares of underlying securities do not need to be bought or sold to adjust for changes in investor demand).

Figure 5: IEMG STP ratio¹¹

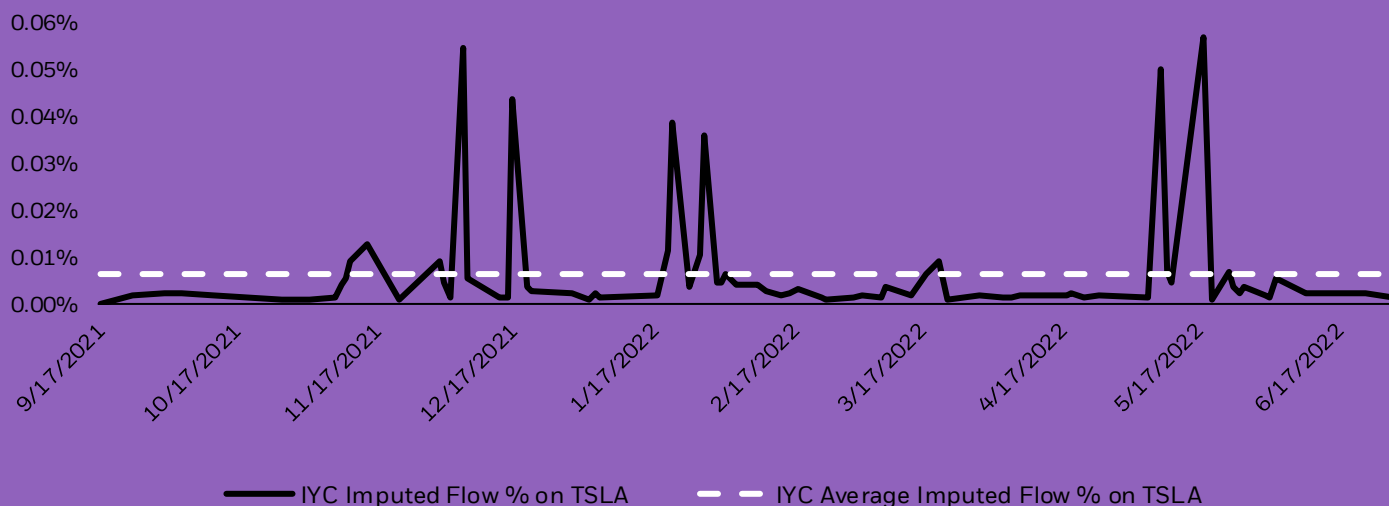


Imputed flow is an estimation of how much stock trading is generated by ETF inflows and outflows. By gathering the holdings (constituents and weights) and daily primary market inflows and outflows of every U.S.-listed equity ETF, we can compute the imputed flow in an individual stock. A low imputed flow ratio suggests that ETF primary activity is not having outsized impact on the trading of the ETF's underlying securities. Like with the STP ratio, low market impact suggests high ETF market quality.

To illustrate, for Tesla Inc. (TSLA), one of the most actively traded U.S. equities, ETFs hold close to \$60 billion in market value of the stock, yet flows into and out of these ETFs have accounted for a fraction of the overall trading of TSLA shares.¹² The iShares U.S. Consumer Discretionary ETF (IYC), which seeks to track the investment results of an index composed of U.S. equities in the consumer discretionary sector, counts TSLA as its second largest holding with a weight of nearly 9% and a market value of \$61 million.¹³ Despite its large holding, the overall impact that flows into and out of IYC have had on TSLA trading is minimal. In fact, the imputed flow of IYC was less than 0.01% from September 2021 through June 2022—meaning, IYC inflows and outflows had generated less than 0.01% of TSLA's trading activity over this period (**Figure 6**).

Trading dynamics, premium/discount behavior, and impact on underlying markets are just three ways to evaluate market quality in ETFs; it can be measured in a variety of ways depending on an investor's use case, the product segment, and other unique considerations investors may have.

Figure 6: Imputed flow (%) of IYC on TSLA¹⁴



The Bottom Line

ETFs and other index funds have become indispensable tools for analyzing and investing in financial markets—but not all funds are created equal. Investment performance is multi-faceted, so it's important that investors have a comprehensive way to consistently measure performance across funds over time. The iShares investment performance framework can help investors understand how different ETFs and other index funds track their indexes and, for ETFs specifically, deliver market quality in all market conditions. It is also a good reminder that there is nothing passive about index fund management.

Fees as of Current Prospectus. All Other Data as of 06/30/2022

Fund Name	Fund Inception Date	Gross Expense Ratio	1-Year Returns		5-Year Returns		10-Year Returns		Since Inception	
			NAV	Mkt Price	NAV	Mkt Price	NAV	Mkt Price	NAV	Mkt Price
iShares MSCI USA Min Vol Factor ETF	October 18, 2011	0.15%	-3.37%	-3.32%	9.46%	9.46%	11.46%	11.46%	12.16%	12.16%

The performance quoted represents past performance and does not guarantee future results. Investment return and principal value of an investment will fluctuate so that an investor's shares, when sold or redeemed, may be worth more or less than the original cost. Current performance may be lower or higher than the performance quoted. Performance data current to the most recent month end may be obtained by visiting www.iShares.com or www.blackrock.com.

ENDNOTES

1. The primary market is where authorized participants transact with ETF issuers to create or redeem ETF shares. The secondary market is where investors buy and sell existing ETF shares on exchange. For further details on the differences between the primary and secondary markets, see "[iShares Investigates: ETF Market Realities](#)".
2. Source: Morningstar Direct as of June 30, 2022, based on Markit Low Beta categorization. A basis point is 1/100th of 1%. Volatility, represented by standard deviation measures how dispersed the tracking difference has been around the average. A higher standard deviation indicates that the tracking difference has been spread out over a larger range of values and thus, more volatile.
3. Source: BlackRock, Bloomberg as of March 31, 2022.
4. Source: BlackRock, Bloomberg as of March 31, 2022. A basis point is 1/100th of 1%.
5. A premium exists if the market price of an ETF share is greater than its net asset value. A discount exists if the market price of an ETF share falls below its net asset value.
6. Net asset value (NAV) is the value of all the securities held by the ETF, often expressed as a value per share. An ETF's official NAV is calculated once per day based on the most recent closing prices of the underlying securities. For U.S.-listed ETFs holding foreign securities, NAV is fair valued at 4pm ET to reflect information released after the local market has closed. Intraday net asset value (iNAV) provides an up-to-the-minute approximation of the net asset value of the ETF.
7. NAV represents the value of the securities held by the ETF and may be based on actual trades or, for securities that may trade infrequently, estimates based on trades of similar securities from the same issuer or sector, or other market metrics. An ETF's market price represents an actionable trade for that entire portfolio at that moment. The two can differ, particularly during periods of volatility and market stress.
8. Source: BlackRock, Bloomberg as of May 31, 2022.
9. Source: BlackRock, Bloomberg as of March 31, 2022.
10. Source: BlackRock, Bloomberg as of March 31, 2022.
11. Source: BlackRock, Bloomberg as of March 31, 2022.
12. Source: BlackRock, Bloomberg as of June 30, 2022.
13. Source: ETF.com, BlackRock, Bloomberg as of March 31, 2022. As of 6/30/22, TSLA represented 8.87% of IYC. Subject to change. TSLA is not in any other funds discussed in this paper.
14. Source: BlackRock, Bloomberg as of June 30, 2022.

Carefully consider the Funds' investment objectives, risk factors, and charges and expenses before investing. This and other information can be found in the Funds' prospectuses or, if available, the summary prospectuses which may be obtained by visiting www.iShares.com or www.blackrock.com. Read the prospectus carefully before investing. Investing involves risk, including possible loss of principal.

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Shares of ETFs may be bought and sold throughout the day on the exchange through any brokerage account. Shares are not individually redeemable from the ETF, however, shares may be redeemed directly from an ETF by Authorized Participants, in very large creation/redemption units. There can be no assurance that an active trading market for shares of an ETF will develop or be maintained.

The iShares Minimum Volatility Funds may experience more than minimum volatility as there is no guarantee that the underlying index's strategy of seeking to lower volatility will be successful.

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