

Momentum in Motion

Dissecting International Return Drivers in 2025 | IMOM ETF

In 2025, international developed markets concluded the year with their strongest performance relative to the U.S. market since the 1990s, trouncing U.S. stocks by double digits. At the same time, the Alpha Architect International Quantitative Momentum ETF (ticker: IMOM) posted its strongest year, with a 46.81% total return, beating both foreign blend and foreign momentum peers.

IMOM vs. Fgn. Mmtm. vs. Fgn. Lg. Blend | Total Returns 2025



Source: YCharts. Cumulative daily total returns at NAV. 1/1/2025 - 12/31/2025. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal. Fgn. Mmtm. represents a category average. See disclosures for methodology. Fgn. Lg. Blend. represents a category average. See disclosures for methodology and standardized returns. Categories determined by YCharts.

Because we believe the momentum factor can at times position itself to capture secular sentiment shifts, two natural questions investors could ask themselves are: (1) Are we at the beginning of a sentiment shift toward international markets, and if so, (2) could IMOM capitalize on this opportunity?

While neither question may have a definitive answer, investigating the second can help investors better understand IMOM's risk profile, construction, potential use cases, and potential role within a portfolio.

Of course, while IMOM is a bottom-up fund that selects what we believe are the highest-momentum stocks in international developed markets, allocation decisions can at times reveal themselves as top-down expressions of market-wide sentiment.

In this paper, we examine the return drivers behind IMOM and analyze whether IMOM capitalized on the relative sentiment shift from the U.S. to international markets in 2025. We break the return drivers down into three main components: (1) country allocation shifts, (2) currency effects, and (3) sector drift. Lastly, we provide some thoughts on whether IMOM could continue to capture this relative sentiment shift if the trend persists.

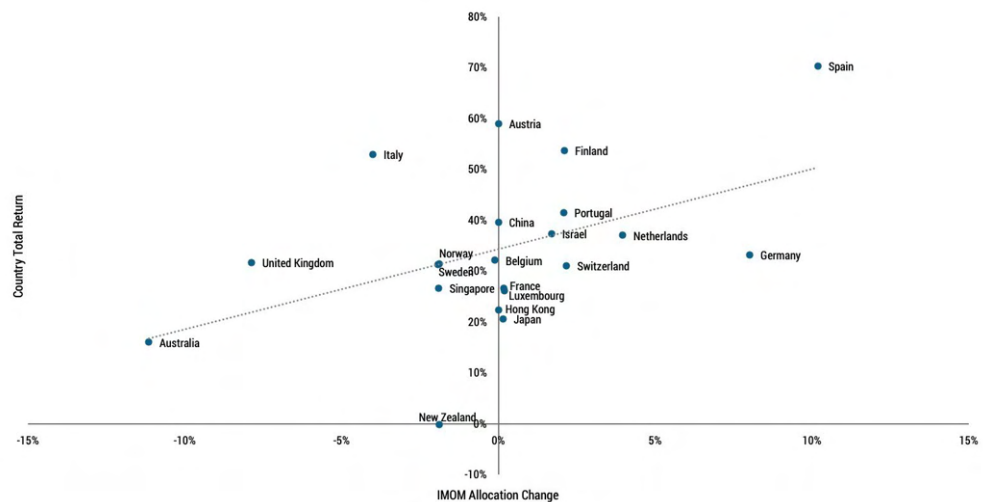
Country allocation shifts

One way to decompose top-down return drivers in international markets is to examine country-level returns. Intuitively, an international momentum strategy should add to markets that continue to outperform and reduce exposure to markets that continue to underperform, as it seeks to capture fundamental and sentiment shifts across regions. To assess whether IMOM accomplished this, we examine the cross-section of weight differentials over the course of the year and compare them to country total returns. In retrospect, one would generally expect IMOM to add to winners and reduce exposure to losers. **Exhibit #1** ranks country returns¹ from worst to best, along with IMOM's allocation changes over the course of 2025.

Exhibit #1

IMOM country allocation changes in 2025

Country	Return	Weight Change
New Zealand	-0.15%	-1.88%
Australia	16.05%	-11.14%
Japan	20.68%	0.15%
Hong Kong	22.44%	0.00%
Luxembourg	26.20%	0.18%
Singapore	26.69%	-1.90%
France	26.72%	0.17%
Switzerland	31.07%	2.17%
Norway	31.35%	-1.94%
Sweden	31.50%	-1.88%
United Kingdom	31.71%	-7.87%
Belgium	32.16%	-0.11%



Source: FactSet. YCharts. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal.

While the results are mostly noise in the middle of the pack, the story begins to take shape at the tails. IMOM added the most to the best-performing country (Spain) and removed the most from the second-worst-performing country (Australia). Ex post, given the leptokurtic nature of the momentum factor, it makes sense that these expressions would appear in the tails.

¹We examine countries for which IMOM had any exposure to in 2025. Country exposure data from FactSet. Country returns are determined by a market-cap weighted portfolio of the largest 50 stocks from each country trading in US exchange and OTC markets. Market cap weights are determined as of the close on December 31st, 2024 to avoid look-ahead bias. Returns are total one-year returns as of December 31st, 2025. The portfolios are not rebalanced. Country universe and return data from YCharts.

When reading into results, it's also important to acknowledge the limitations of long-only international stock momentum programs. Specifically:

1) **Long bias:** Because IMOM is long-only, it cannot express bearish views via short positions. For example, when looking at the worst performer (New Zealand), IMOM removed only 1.88% from its allocation. But if New Zealand was such a poor performer, why didn't IMOM remove more? Assuming IMOM's process sought to further reduce exposure, it only had a 1.88% starting weight to eliminate. Any additional reduction would have to be expressed through a short position.

Out of the bottom half (11) performers, IMOM ended the year with a 0% allocation to 5 of them.

2) **Beginning allocation bias:** Allocation shifts are highly sensitive to beginning weights. Reductions are most evident when starting allocations are large, while additions are most evident when starting allocations are minimal or nonexistent.

3) **Investment universe bias:** Investment universe bias: Allocations are sensitive to the composition of the investment universe. IMOM selects its stocks from among the largest 1,500 stocks in developed international markets. Intuitively, countries with more large-cap stocks (Japan, the UK) are likely to be overrepresented in the universe relative to countries with fewer large-cap stocks (New Zealand, Portugal). Therefore, allocations will likely be tilted toward countries with more largecap stocks.

In general, our findings suggest that IMOM, while not a momentum fund that directly screens for higher-performing regions, can at times express regional bullish and bearish views, particularly when those views reside in the tails.

Currency effects

IMOM selects its stocks using U.S. dollar-denominated returns. In practice, this means that stocks denominated in currencies that are rising against the dollar are more likely to be selected than stocks denominated in currencies that are falling against the dollar, all else equal. Intuitively, IMOM should, over time, add exposure to the best-performing currencies and reduce exposure to the worst-performing ones.

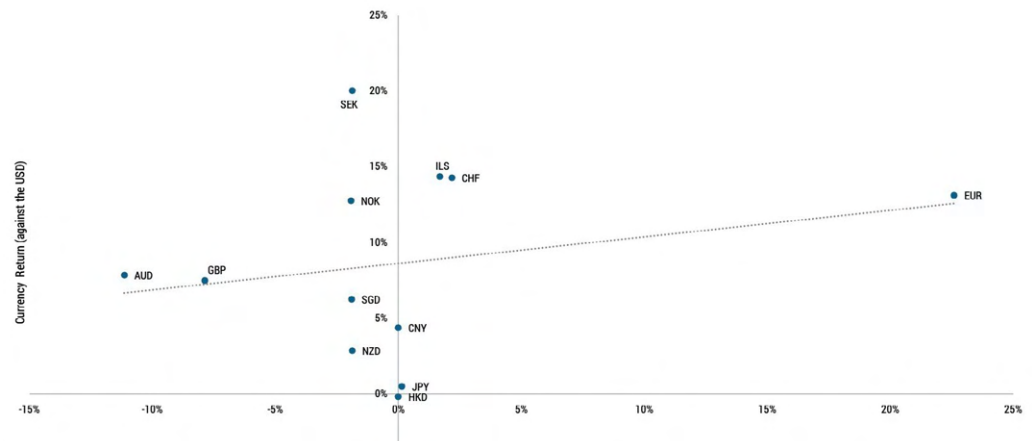
Exhibit #2 ranks currency returns against the U.S. dollar for regions to which IMOM had exposure in 2025², alongside the currency allocation shifts IMOM made throughout the year.

²To simplify the process, currency exposure is dictated by assigning the traded currency to each of the countries IMOM had exposure to at the time.

Exhibit #2

IMOM currency allocation changes in 2025

Currency	Return	Weight Change
HKD	-0.20%	0.00%
JPY	0.47%	0.15%
NZD	2.84%	-1.88%
CNY	4.38%	0.00%
SGD	6.24%	-1.90%
GBP	7.48%	-7.87%
AUD	7.83%	-11.14%
NOK	12.77%	-1.94%
EUR	13.10%	22.59%
CHF	14.26%	2.17%



Source: FactSet. YCharts. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal.

At first glance, the relationship between these two variables appears random at best. The worst performer (Hong Kong dollar) experienced no change, while the best performer (Swedish krona) saw a negative allocation shift over the course of the year. So what's going on?

First, we must acknowledge that the three aforementioned limitations for long-only international equity momentum strategies also apply to currency allocation (long bias, beginning allocation bias, and investment universe bias). Importantly, two of the top three and two of the bottom three currencies trade in markets with lower market capitalizations relative to their peers (Sweden, Israel, New Zealand, Hong Kong). Accordingly, one could view these as smaller currencies, each of which has a limited impact on IMOM's portfolio. For example, in calendar year 2025, IMOM maintained a combined average exposure of 13.02% to these four currencies, which is only modestly higher than its exposure to the third-largest average weight (the Australian dollar at 10.70%).

Interestingly, the largest allocation shifts (up or down) occurred in three of the most heavily traded currencies (the euro, pound sterling, and Australian dollar), suggesting that both beginning allocation bias and investment universe bias heavily influenced currency shifts in 2025.

One way to reduce the noise introduced by these biases is to divide the universe into halves and quartiles. **Exhibit #3** displays the average return and average allocation shift across each of these groupings.

Exhibit #3

IMOM currency allocation changes in 2025 (halves and quartiles)

Halves	Avg. Return	Weight Change	Quartiles	Avg. Return	Weight Change
Top half (AUD, CHF, EUR, ILS, NOK, SEK)	13.72%	1.92%	Top quartile (CHF, ILS, SEK)	16.21%	10.66%
			Second quartile (AUD, EUR, NOK)	11.23%	3.17%
			Third quartile (CNY, GBP, SGD)	6.03%	-3.26%
			Bottom quartile (HKD, JPY, NZD)	1.04%	-0.58%

Source: FactSet. YCharts. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal.

Here, the relationships begin to re-emerge. The top half of performing currencies received a small positive weight change, while the bottom half received a small negative weight change. Looking at quartiles, the pattern is similar, although both the top and bottom quartiles experienced much smaller weight changes than the middle two.

While these results are encouraging, they suggest that currency effects likely influence stock selection but remain a secondary and often noisy driver. One could argue this is a positive outcome, as investors would not want the currency tail to wag the stock selection dog. Still, IMOM appears to have somewhat captured sentiment shifts in currency markets.

Sector drift

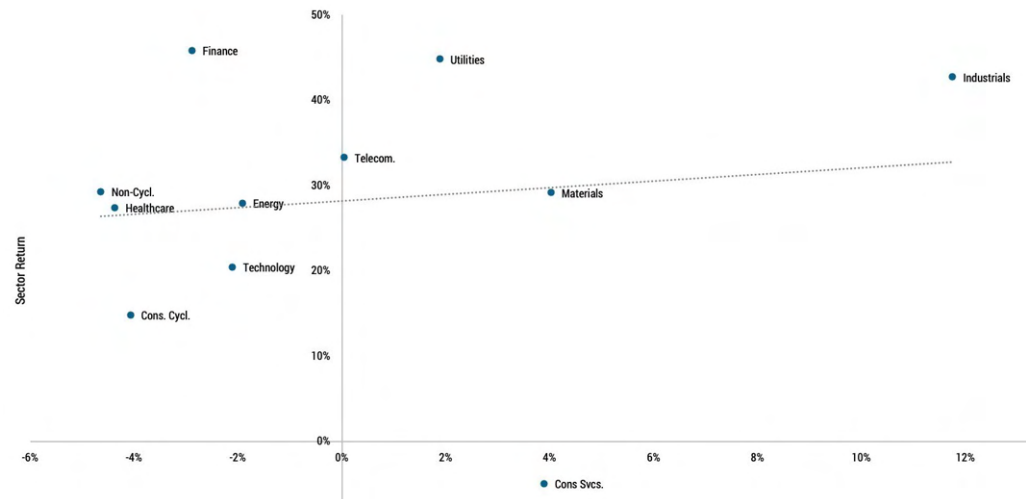
Lastly, we examine sector drift to determine whether IMOM captured any cross-sectional momentum in international industry returns. Intuitively, an international momentum strategy should add to sectors that continued to outperform while reducing exposure to sectors that continued to underperform. **Exhibit #4** ranks sector returns³ from worst to best, along with IMOM's allocation changes over the course of 2025.

³We examine ten industries for which IMOM had exposure in 2025. Sector exposure data from FactSet. Industry returns are constructed by market cap weighting all stocks in each of these eleven RBICS industries from our previous country universes. Market cap weights are determined as of the close on December 31st, 2024 to avoid look-ahead bias. Returns are total one-year returns as of December 31st, 2025.

Exhibit #4

IMOM sector allocation changes in 2025

Sector	Return	Weight Change
Cons. Svcs.	-4.98%	3.90%
Cons. Cycl.	14.84%	-4.07%
Technology	20.42%	-2.11%
Healthcare	27.41%	-4.37%
Energy	27.96%	-1.92%
Materials	29.17%	4.02%
Non-Cycl.	29.26%	-4.64%
Telecom.	33.29%	0.04%
Industrials	42.73%	11.75%



Source: FactSet. YCharts. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal.

At first glance, the relationship between sector returns and allocation shifts seems to follow a linear, albeit noisy, pattern. Astute readers may notice that the relationship appears weakest in the two top-performing sectors (Utilities and Financials), where IMOM may not have added as much as expected. In the case of Financials, the best-performing sector, IMOM outright reduced its allocation. So what happened?

Here, again, the three aforementioned limitations of long-only international stock momentum programs come into play. Specifically:

- 1) **Utilities:** By market cap, Utilities is the second smallest of all eleven sectors⁴. While likely not the only factor, this influences IMOM's opportunity set within its investment universe.
- 2) **Financials:** The Financials sector was the best performer in 2025, and while the allocation change appears to run counter to the momentum narrative, the explanation largely reflects the mechanics of the portfolio. In this case, beginning allocation bias was on full display. Specifically, IMOM already had more than a 35% exposure to Financials at the start of the year. Over the course of the year, Financials maintained the largest average weight of any sector.

In an attempt to reduce some of the noise introduced by these biases, **Exhibit #5** divides the sector universe into halves and terciles, and displays the average return and average weight change for each of these groups.

⁴According to the market cap weighting of our aforementioned country universe. Consumer services makes up the smallest sector by market cap.

Exhibit #5

IMOM sector allocation changes in 2025 (halves and terciles)

Halves	Avg. Return	Weight Change	Terciles	Avg. Return	Weight Change
Top half (Fin., Util., Ind., Tel., Non-C, Mtrl.)	39.18%	1.23%	Top tercile (Fin., Util., Ind.)	44.45%	3.58%
			Second tercile (Tel., Non-C., Mtrl, Enrg.)	29.92%	-0.62%

Source: FactSet. YCharts. PAST PERFORMANCE DOES NOT GUARANTEE FUTURE RESULTS. Investing involves risk, including the potential loss of principal.

Here, the story becomes clearer. In general, IMOM added to sectors that performed well and reduced exposure to laggards. While there is noticeable variation from sector to sector, IMOM appears to have broadly followed momentum across sectors.

Concluding thoughts

Our main goal in this paper is to assess whether IMOM could potentially capitalize on a continued sentiment shift into international stocks. While there is no single fast and hard answer, over the previous year, which marked one of the strongest periods of international outperformance relative to the U.S., IMOM appears to have captured relative sentiment shifts across countries, currencies, and sectors. That said, there are two concluding ideas that readers may find pertinent to this discussion:

- 1) **Macro trends can be intercorrelated:** Each factor studied (countries, currencies, sectors) can affect the others, both positively and negatively. For example, the best-performing country (Spain) likely benefited from a heavy overweight to the best-performing sector (Financials), along with a strong currency tailwind (the euro). It is important, then, not to overextrapolate returns from any single factor and instead to consider the broader picture.
- 2) **Sentiment shifts can be self-reinforcing:** The momentum factor has historically benefited from short spurts in returns. These periods typically last at least a year and can extend for half a decade or longer. International momentum, for example, benefited strongly in the mid-2000s following a breakdown in U.S. growth stocks and a renewed sentiment shift toward international stocks.

Long periods of outperformance like these can occur when investors are slow to react to fundamental shifts in the investment landscape and typically end after a period of overextrapolation of those same fundamentals. Timing the length, beginning, and end of these periods can prove to be an extremely arduous exercise. Investors who seek to access momentum return streams may be better served by strategically allocating to momentum programs and rebalancing regularly at the portfolio level.

IMPORTANT INFORMATION

STANDARDIZED RETURNS as of 03/31/2026

Type	YTD	1 Month	3 Month	6 Month	1 Year	3 Year	5 Year	Since Inception
MKT	4.48%	-11.99%	4.48%	11.42%	44.74%	18.44%	6.98%	6.85%
NAV	2.88%	-13.78%	2.88%	9.19%	42.87%	18.02%	6.64%	6.68%

Returns are average annualized total returns, except those for periods of less than one year, which are cumulative.

The performance data 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 their original cost. Current performance may be higher or lower than the performance quoted. Market price returns are based upon the closing composite market price and do not represent the returns you would receive if you traded shares at other times. For performance data current to the most recent month end, please call (215) 882-9983 or visit funds.alphaarchitect.com

This material has been distributed for informational purposes only and should not be considered investment advice or a recommendation of any particular security, strategy, or investment product. Information contained herein has been obtained from sources believed to be reliable, but not guaranteed. No part of this material may be reproduced in any form, or referred to in any other publication, without express written permission.

PROSPECTUS OFFER

Investors should carefully consider the investment objectives, risk, charges, and expenses of the funds. This and other important information is in the indicated fund's prospectus, which can be obtained by calling (215) 882-9983 or by visiting www.funds.alphaarchitect.com. The prospectus should be read carefully before investing.

PRINCIPAL RISKS

Investment risk. When you sell your Shares of the Fund, they could be worth less than what you paid for them. The Fund could lose money due to short-term interest rate market movements and over longer periods during continued interest rate market movements. Therefore, you may lose money by investing in the Fund.

Management Risk. The Fund is actively managed and may not meet its investment objective based on the Adviser's success or failure to implement investment strategies for the Fund.

Equity Investing Risk. An investment in the Fund involves risks similar to those of investing in any fund holding equity securities, such as market fluctuations, changes in interest rates and perceived trends in stock prices. The values of equity securities could decline generally or could underperform other investments. In addition, securities may decline in value due to factors affecting a specific issuer, market or securities markets generally.

Security Selection Risk. Data for some companies may be less available and/or less current than data for companies in other markets. The Adviser uses a quantitative model, and its processes could be adversely affected if erroneous or outdated data is utilized. In addition, securities selected using the quantitative model could perform differently from the financial markets as a whole as a result of the characteristics used in the analysis, the weight placed on each characteristic and changes in the characteristic's historical trends.

Large-Capitalization Companies Risk. Large-capitalization companies may trail the returns of the overall stock market. Large-capitalization stocks tend to go through cycles of doing better - or worse - than the stock market in general. These periods have, in the past, lasted for as long as several years. Larger, more established companies may be slow to respond to challenges and may grow more slowly than smaller companies.

Small- and Mid-Capitalization Company Risk. Investing in securities of small- and mid-capitalization companies involves greater risk than customarily is associated with investing in larger, more established companies. These companies' securities may be more volatile and less liquid than those of more established companies. Often small- and mid-capitalization companies and the industries in which they focus are still evolving and, as a result, they may be more sensitive to changing market conditions.

Momentum investing risk. Momentum is investing in or having exposure to securities that have had above-average recent returns. These securities may be more volatile than a broad cross-section of securities. Returns on securities that have previously exhibited momentum may be less than returns on other styles of investing or the overall stock market. Momentum can turn quickly and cause significant variation from other types of investments, and stocks that previously exhibited high momentum may not experience continued positive momentum. In addition, there may be periods when the momentum style is out of favor, and during which the investment performance of the Fund using a momentum strategy may suffer.

Note on category average methodology Constituents of a given category are determined by YCharts. As of 4/30/2024, the calculation method used to determine the category average's returns changed to account for potentially different inception dates. Previously, a straight average of constituent funds' total return net asset value (NAV) was used to determine the category's average total return NAV; the percent change of the category average NAV was then used to calculate returns. As of 4/30/2024, total returns for the category are now found using a straight average of the total NAV return (percent change) for a given frequency (daily, weekly, monthly, etc.). There may be instances where the straight average of the constituent funds' NAV returns may be higher or lower than the straight average of the total NAV return. As of 4/30/2024, all category average returns are calculated using the straight average of the constituent funds' total NAV return for a given frequency.

Category average constituent selection criteria

It is not possible to invest directly in a category. Unless otherwise noted, the given category is represented by the 50 biggest funds based on assets under management (AUM). The AUM figure is point-in-time and is not retroactively applied to constituent funds. In the event fewer than 50 funds are available in a given category, all funds are used in to calculate returns. Unless otherwise indicated, mutual funds are excluded from category average constituents. Funds that may have been open for investment over the given period but are no longer active are not included. The number of constituent funds in a given category average may affect represented returns. In the event of multiple share classes, the share class with the highest AUM is referenced. In the event of a duplicate ETFs and mutual funds from the same fund family, the ETF is referenced. Category returns are a straight average of the total return of the constituent funds over the given period.

Wherever possible, we reference the 50 biggest funds by AUM to provide what we believe to be a reasonable sample of the most popular strategies that includes a mix of passive and active approaches. The highest AUM funds tend to have more established track records, providing what we believe to be a reasonable basis for returns. We reference all funds in the category in the event there are fewer than 50 funds open for investment.

Note on momentum category

There is no explicit "momentum" category. Generally, momentum funds tend to fall into the "growth" category, however, that standard is not uniformly applied by third party data providers such as FactSet, Morningstar, YCharts, or others. To facilitate what we believe to be fair and balanced comparison, we build a momentum category using the following criteria.

International Developed Momentum

1. Exclude Alpha Architect funds
2. Exclude non-USD denominated funds
3. Exclude mutual funds. We do this to facilitate a fair comparison at a structural level (ETF to ETF) and to facilitate accurate advanced characteristics data, such as active share and momentum score
4. Filter for Broad Asset Class: International Equity & Sector Equity. We include sector momentum ETFs on the basis that a sector-based momentum strategy could be a reasonable alternative to a broad-based momentum approach. Filtering for funds in the International Equity broad asset class excludes alternatives such as long/short momentum funds. Our goal is to identify "peer" momentum strategies that are long-only.
5. Filter for US Equity Exposure <50%. We seek to avoid strategies that aren't focused on International Developed equities.
6. Filter for Emerging Market exposure <20%. Our Quantitative Int'l Momentum ETF (IMOM) excludes emerging market equities in its process; as a result, we remove funds focused on emerging market to facilitate what we believe to be a fair and balanced comparison.
7. Remove funds that contain the word "value" or variations in the fund's name. This removes funds that blend value and momentum together, which can cause performance deviations.
8. Filter funds that contain the word "momentum" or variations in the fund. While this step likely understates the number of funds that use momentum in their investment strategy, we believe this is a reasonable approach to identify funds seeking to hold themselves out as a momentum strategy.

International Momentum peers represented by ETFs that we believe use a momentum-based strategy to manage its portfolio. Momentum defined as buying securities that have had high returns over a recent period and selling those that have had poor returns over the same period. Funds selected based on the appearance of "momentum" in the security's name and a portfolio that predominantly invests in developed international securities. As of 6/30/2025, there are three ETFs that meet the given criteria.

Limited universe

The information presented regarding peer ETFs may be based on a limited universe of comparable funds that we believe are relevant to the strategy, investment style, and asset class of this ETF. This comparison is not exhaustive and may exclude other funds that also offer similar exposures or strategies. Investors are encouraged to conduct their own research and consider other products in the marketplace that may provide comparable investment objectives or characteristics. Past performance is no guarantee of future results, and differences in fees, structures, or market conditions may lead to different outcomes between peer funds and this ETF. Investors should consider factors such as risk tolerance, fees, liquidity, and investment goals before making any investment decisions based on peer comparisons. This disclosure is not an endorsement of any peer fund, nor should it be interpreted as financial advice.

Foreign Large Blend represented by the 50 biggest ETFs based on assets under management in the Foreign Large Blend category, as defined by YCharts. Foreign Large-cap represented by ETFs that invest in stocks with market caps in the top 70% of developed markets, including Japan, Britain, France, and Germany. The blend designation is assigned when neither growth or value characteristics dominate.

Consumer Cyclical is composed of companies that offer products targeted toward individual or household use, including apparel, toys, school and art supplies, and electronics; motor vehicle sales and rental, and automotive parts and services; building materials, garden supplies, furniture, appliances, cabinetry, window treatments, and carpets.

Consumer Non-Cyclical is composed of companies that offer products targeted toward individual and consumer needs, including groceries, beverages, health and personal care items, kitchenware, decorative items, and household cleaning products.

Consumer Services is composed of companies that offer services targeted toward individuals, including accommodation; food and beverage retail; gaming, arts, entertainment and recreation; and television, radio, film, and print media.

Energy is composed of companies that primarily engage in oil and gas exploration and production, pipeline transportation, refineries, and oil and gas equipment and services; leasing, mining and processing of coal and coke; uranium, radium, and vanadium mining.

Finance is composed of companies that offer financial products and services in banking, insurance, investment, specialty finance, and real estate.

Healthcare is composed of companies that offer products and services that are designed, developed, and utilized in the promotion of health and well-being, including medical services, health plans, medical devices, and biopharmaceuticals.

Industrials is composed of companies that offer products and services for industrial use or with applications in aerospace, defense, or security; transportation, construction, and related infrastructure; or farming, including equipment and machinery manufacture, wholesale, rental, and distribution and related support activities.

Non-Energy Materials is composed of companies that offer basic and intermediate material products, including non-energy mining; forestry, timber logging, and lumber production; and chemical, plastic, paper, metal, and textile manufacturing.

Technology is composed of companies that offer semiconductor, electronic, and optics based products and related software and services that directly or indirectly facilitate the creation, transfer, storage, manipulation, or interpretation of data, audio, and video.

Telecommunications is composed of companies that offer services designed to promote or enhance transmission of voice, data, and video over various communications mediums, including cable, satellite, terrestrial based wireless, and wireline mediums.

Utilities is composed of companies that offer gas, electricity, and water services delivered directly to residential and commercial users.

The Fund is distributed by PINE Distributors LLC. The Fund's investment adviser is Empowered Funds, LLC, which is doing business as ETF Architect. Alpha Architect, LLC serves as the Sub-adviser to the Fund. PINE Distributors LLC is not affiliated with ETF Architect or Alpha Architect, LLC.

ETFAC-5273153-03/26