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Equity Portfolio Construction: Filling the Gap Between Alpha and Beta

Investors are increasingly implementing global equity investments by splitting allocations between concentrated, high-active share strategies on one side and passive products on the other. We view this barbell-like, alpha-beta separation approach as sensible in terms of optimizing between cost and active risk.

However, abandoning what we view as the flawed middle ground of over-diversified, low-tracking error active management (or "closet-indexing") need not mean neglecting what we view as a proven, efficient middle ground of systematic premia paid to value, carry, quality, momentum and insurance risks. Or, to put it another way, an investor that accepts the systematic exposures of passive management can consider other, similarly cost-effective systematic exposures.

In this paper, we show how adding risks, in the form of diversified risk premia and put-option-writing strategies, can bring additional diversification, alpha and risk-adjusted return to an active-plus-passive global equity allocation.

Executive Summary

- Separating alpha and beta and moving away from over-diversified "closet indexing" strategies can make investment portfolios more efficient.
- But on its own, a barbell-like alpha-beta separation portfolio assumes that an investor is only interested in the systematic biases and exposures that come with market capitalization-weighted allocations—chiefly large-cap growth and momentum.
- We believe that a larger middle ground of useful systematic factors or risk premia exists to be extracted between passive and highly active allocations: while these strategies can look like "closet indexing," they use diversification systematically to isolate specific risks.
- We focus on five premia from global developed and emerging markets equities that are available as index products: value, size, quality and momentum, as well as the insurance premia that can be extracted through put-option-writing strategies.
- We show the impact of adding these five premia to standard developed world and emerging markets alpha-beta separation portfolios, between 2006 and 2019.
- Specifically, we show that "completing" equity factor and risk premia exposures can deliver additional diversification, alpha and risk-adjusted return.

Over the past decade or so the separation of alpha and beta returns in institutional investment portfolios has been gathering pace.

The logic is compelling. When actively managed strategies are constrained in the amount of tracking error they can assume against their index benchmarks, much more of their return will be determined by the performance of the index ("beta") than by the performance of the fund manager's active positions ("alpha"). That can mean that active management fees get paid for very index-like returns.

Index returns can be accessed almost for nothing, freeing up the investment-fee budget to be spent on strategies in which tracking error is much less constrained and returns are determined much more by active positions. By separating alpha and beta, the same mix of alpha and beta can be accessed at much lower overall cost; the overlap between one active strategy and another becomes much smaller; and assessing managers' stockpicking skills may become easier.

Is that the end of the story? Is the barbell-like, alpha-beta separation portfolio the end point in our attempt to take risk and allocate investment-fee costs efficiently?

We do not think so.

It is undoubtedly beneficial to move away from inefficient "closet index" strategies based on traditional, fundamental bottom-up stock selection. We would argue that these strategies simply hold too many stocks, with the majority included to manage risk against the benchmark rather than to express the portfolio manager's views. But that is quite different from quantitative strategies that use diversification systematically to isolate specific risks: while these can look like "closet indexing," each stock is held with a deliberate risk-return objective in mind.

Moreover, when an investor maintains passive allocations alongside highly active strategies with everything in the middle left out, it begs certain questions: Does the investor really want the systematic factor biases that come with a market-cap passive allocation—such as the dominance of large growth stocks in its performance—or the exposure to momentum? And assuming those exposures are desirable, could the investor also benefit from additional factor exposures that are not captured systematically by either the passive or the highly active allocations?

In abandoning the inefficient middle ground between highly active and passive equities, are investors neglecting the potentially useful, efficient middle ground of systematic factors and diversified risk premia?

Slotting Diversified Risk Premia Into Place

In addition to the traditional interest rate, credit and equity risk premia, academics and practitioners have identified many other risk premia that investors can systematically extract from the market.

In this paper, we will use MSCI indices to represent strategies that access these risk premia, as well as indices that replicate put-option-writing strategies. Those indices deliver exposure to the value, quality, small size, momentum and insurance premia.

On average, outperformance is associated with stocks that trade at lower valuation multiples; with strong "quality" characteristics such as stable cash flows and low debt; with lower market capitalizations (although the existence of this premia is increasingly disputed); or with clear upward direction in recent fundamental or price performance.

The insurance premium can be accessed by writing fully collateralized put options on equity market indices. Investors who hold equities are clearly already exposed to the equity risk premium, which accounts for a lot of the exposure that comes with writing index options. The advantage of extracting that premium via options is that the payoff pattern is different from the payoff pattern of simply holding equities, and therefore provides diversification over the short term (as we will see later on). The insurance risk premium is additional: options have generally outperformed the underlying market over time because option buyers are seeking insurance against a decline in equity market values—and buyers of insurance tend to overpay (whether they are insuring a house or an investment portfolio).

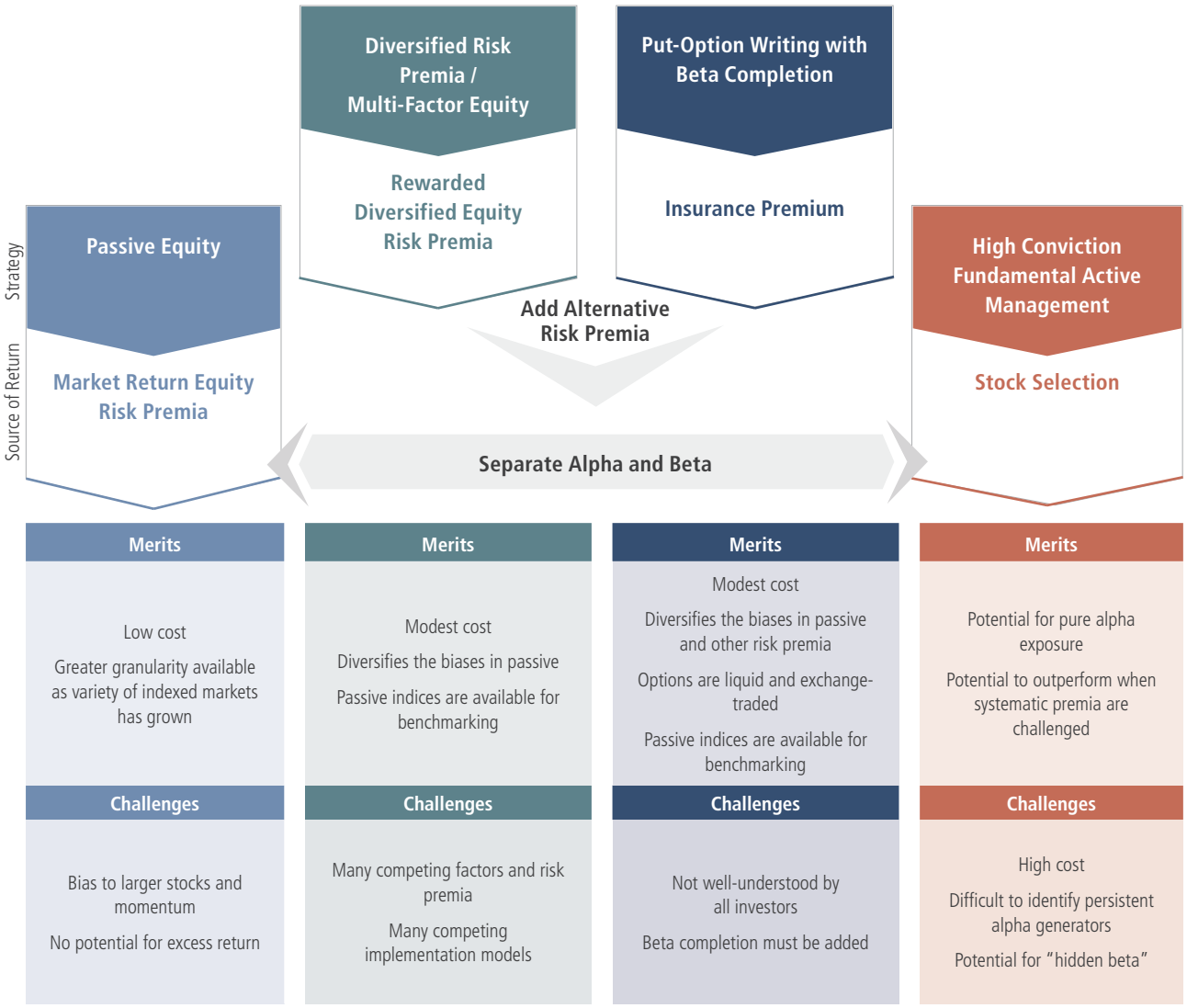
These premia are not guaranteed and they fluctuate in magnitude. On occasion, a period of extended underperformance or downside correlation between a number of premium-generating strategies, such as we saw in 2018, leads investors to wonder whether these premia are still being paid or have become too popular and "crowded." As we have written elsewhere, we see no evidence of that: the worst performers of 2018, such as value, tended to be the least crowded; and while risk premia strategies have attracted flows, it is worth remembering that they are often just purer versions of the value and quality strategies at the heart of much traditional long-only active management—and the flow out of traditional active into passive management has dwarfed the flow into alternative risk premia. Often we find that abnormal underperformance or correlation is related to the way in which premium-generating strategies are constructed: introducing a fundamentally informed sense check on stock selection and properly controlling for the presence of the market risk factor can help to create "cleaner" exposures.[1]

Overall, we believe that the long-term excess returns that risk premia can generate, and their general tendency to diversify one another over the short term, are well documented. It is also relatively cost-efficient to access them.

We propose slotting risk premia into the space opened up by the classic alpha-beta separation portfolio, as shown in figure 1. This can complete the systematic factor exposures of that portfolio at modest cost.

[1]See "Conversations With… Ray Carroll" at https://www.nb.com/global/insights/conversations-with-ray-carroll

FIGURE 1. COMPLETING THE ALPHA-BETA SEPARATION PORTFOLIO WITH MULTI-FACTOR EQUITY AND PUT-OPTION WRITING



Source: Neuberger Berman. For illustrative purposes only.

Defining Our Model Portfolio Components

We looked at the performance impact that slotting the risk premia into the alpha and beta separation portfolio would have on a global equity allocation by constructing model developed world and emerging markets equity portfolios along the lines set out in figure 1.

For passive equity, we used the MSCI World and Emerging Markets Net Total Return Indices USD (NDDUWI and NDUEEGF); and for multi-factor equity, we used the MSCI World Diversified MultiFactor Net Return Index USD (M1WODMF), excluding this multi-factor equity sleeve from emerging markets as there is not a suitable index. For equity put option writing, we used the CBOE S&P 500 and EAFE PutWrite Indices (PUT and PXEA) for the developed world portfolio and the CBOE Emerging Markets PutWrite Index (PXEFSM) for the emerging markets portfolio; these indices exhibit only around two-thirds of the volatility of their underlying equity indices, and therefore we raise the beta of these return streams to 1.0 with an overlay of equity index futures.

In the put-writing component of the model developed world portfolio, the PUT and PXEA index allocations were rebalanced monthly.

For Active Fundamental Equity, we selected from the eVestment database 10 portfolio strategies with tracking errors against their benchmarks of at least 4%, from the second quartile of 10-year performance as of June 2019. These strategies were equally weighted and rebalanced monthly. We believe this selection ensures a persistently high level of active management and represents a realistic prospect of successful manager selection over time.

The two components of the standard alpha-beta separation portfolio and the four components in our proposed model allocation were rebalanced monthly.

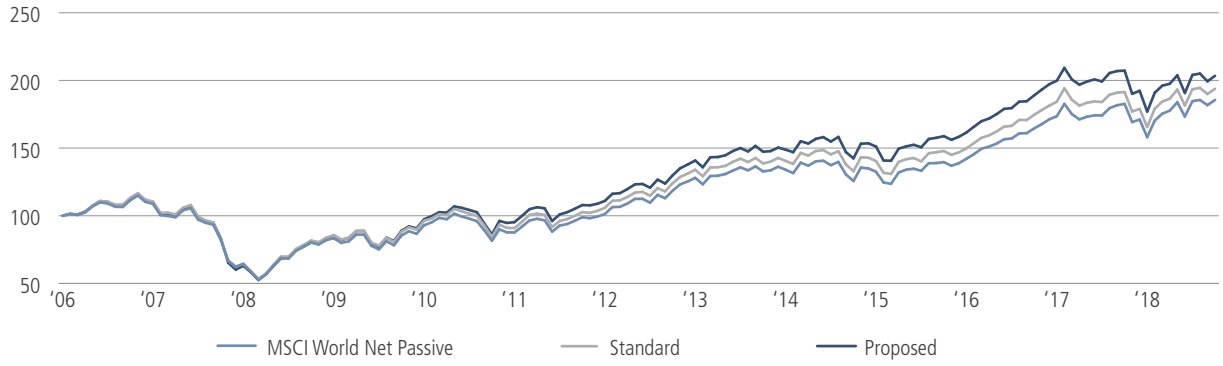
Fees for each sleeve in the model portfolios were estimated based on associated exchange traded funds for the indices and estimates of median active manager charges from the consultant Mercer.

Outperformance Increased Substantially in Both Developed and Emerging Markets

We compared our proposed model solutions to the standard alpha-beta separation portfolios, between 2006 and 2019. The results for the model developed world equity portfolio are shown in figure 2.

FIGURE 2. ADDING DIVERSIFIED RISK PREMIA AND PUT-WRITING TO DEVELOPED WORLD EQUITIES, 2006 – 2019

Model Performance (net of fees)



	Passive	Multi-Factor	PutWrite	Active Fundamental Equity	Standard Implementation	Proposed Model
	MSCI World Net Total Return Index USD	MSCI World MultiFactor Net Index USD	60% CBOE S&P500 PutWrite Index / 40% CBOE MSCI EAFE PutWrite Index (with beta completion)	Ten actively managed portfolios with tracking errors >4%, from the 2nd quartile of performance over 10 years (eVestment database)	60% Passive / 40% Active Fundamental Equity	25% Passive / 25% Multi-Factor / 25% PutWrite / 25% Active Fundamental Equity
Annualized Return	4.97%	5.98%	5.93%	5.85%	5.33%	5.73%
Annualized Volatility	15.57%	15.61%	17.99%	15.86%	15.65%	16.04%
Reward/Risk	0.32	0.38	0.33	0.37	0.34	0.36
Max Drawdown (Peak to trough)	-54.18%	-53.04%	-56.76%	-54.24%	-54.20%	-54.49%
Max Drawdown (12M)	-47.25%	-45.65%	-51.54%	-48.46%	-47.73%	-48.19%
Beta-Adjusted Excess Return	N/A	0.95%	1.23%	0.87%	0.35%	0.80%
Tracking Error vs. Passive	N/A	2.86%	5.59%	4-7%	0.90%	1.78%

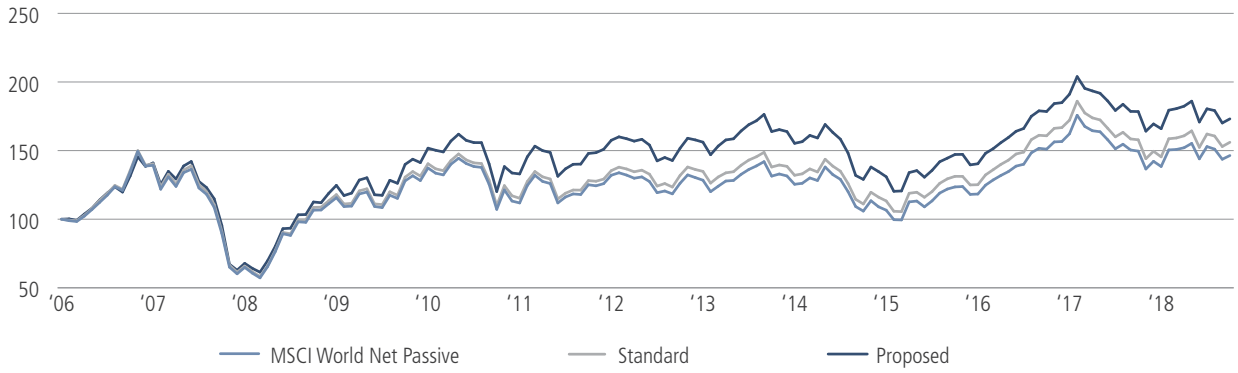
Source: Bloomberg, eVestment, Neuberger Berman. Performance period is January 2006 through June 2019. Performance is shown net of fees, which are assumed to be 0.24% (Passive), 0.35% (Multi-factor), 0.38% (Putwrite) and 0.61% (Active Fundamental Equity), based on exchange traded fund (ETF) fees and an estimate of median active management fees for a $100m segregated account from Mercer. The multi-component portfolios were rebalanced monthly.

In exchange for slightly higher volatility, the model developed world equity solution delivered 40 basis points of extra return per year, resulting in a higher risk-reward ratio. Annualized alpha, or the beta-adjusted excess return, more than doubled, from 0.35% to 0.80%.

Diversification between the component elements helps to explain much of this extra alpha. Calculated for the 2011 – 2019 period, the average correlation between the multi-factor, putwrite and active fundamental equity strategies was just 0.15. Putwrite was uncorrelated with the other two; correlation between the multi-factor and active strategies was 0.44.

The results for the model emerging markets equity portfolio are shown in figure 3.

FIGURE 3. ADDING PUT-WRITING TO EMERGING MARKET EQUITIES, 2006 – 2019
Model Performance (net of fees)



	Passive	PutWrite	Active Fundamental Equity	Standard Implementation	Proposed Model
	MSCI Emerging Market Net Total Return Index USD	CBOE Emerging Markets PutWrite Index (with beta completion)	Ten actively managed portfolios with tracking errors >4%, from the 2nd quartile of performance over 10 years (eVestment database)	60% Passive / 40% Active Fundamental Equity	33% Passive / 33% PutWrite / 33% Active Fundamental Equity
Annualized Return	3.03%	5.61%	4.31%	3.55%	4.40%
Annualized Volatility	21.76%	21.89%	21.23%	21.52%	21.28%
Reward/Risk	0.14	0.26	0.20	0.17	0.21
Max Drawdown (Peak to trough)	-61.67%	-56.05%	-60.47%	-61.19%	-57.82%
Max Drawdown (12M)	-56.62%	-52.64%	-56.04%	-56.16%	-54.65%
Beta-Adjusted Excess Return	N/A	2.32%	1.10%	0.44%	1.21%
Tracking Error vs. Passive	N/A	8.03%	4-7%	1.01%	2.94%

Source: Bloomberg, eVestment, Neuberger Berman. Performance period is January 2006 through June 2019. Performance is shown net of fees, which are assumed to be 0.14% (Passive), 0.35% (Putwrite) and 0.88% (Active Fundamental Equity), based on exchange traded fund (ETF) fees and an estimate of median active management fees for a $100m segregated account from Mercer. The multi-component portfolios were rebalanced monthly.

In this case, the proposed model solution delivered a higher annualized return with lower volatility, resulting in a meaningfully higher risk-reward ratio. Annualized beta-adjusted excess return was almost three times as high, going from 0.44% to 1.21%. Unlike the model developed markets solution, this solution also suffered smaller drawdowns than the standard alpha-beta separation portfolio. Correlation between the put-write and the active fundamental equity components was slightly higher in emerging markets, at 0.17, but still low.

There is not a suitable index with which to test the impact of diversified risk premia in emerging markets, but we find that they are additive to risk-adjusted return in the developed markets model portfolio, implying that a similar, systematic risk premia strategy could achieve similar results here.

Conclusion

The hypothetical portfolios detailed in this paper are simplified models of what an investor could implement in pursuit of our proposed solution in global equities.

The investor may have confidence in a different set of risk premia than the five we propose. The investor may have specific investment beliefs that determine the style of active manager it would select; or the investor may simply achieve a better or worse result than that achieved by our group of second-quartile strategies.

As an active manager in both diversified risk premia and option strategies, we certainly believe that superior results can be achieved than those represented by what we view as the somewhat crude and mechanical strategies used to calculate the indices. Moreover, we would add a fifth risk premia, carry (or income), to the value, quality, small size and momentum premia present in the MSCI indices: on average, outperformance has also been associated with stocks that trade with high dividend yields.

Even with this simple, rules-based implementation, however, we show the benefits of taking the logical next steps to "complete" the classic alpha-beta separation portfolio. Historically, the results would have included better risk-adjusted returns than either a market cap-weighted passive allocation or the standard alpha-beta separation portfolio.

Between cost-efficient passive and alpha-generative active management, diversified risk premia and collateralized put-option writing have clear roles to play in completing an equity allocation with a fuller, more diversified range of systematic risk exposures.

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Hypothetical Backtested Performance Disclosures

The hypothetical performance results included in this material are for backtested model portfolios and are shown for illustrative purposes only. Neuberger Berman calculated the hypothetical results by running a model portfolio on a backtested basis using the methodology described herein. The results do not represent the performance of any Neuberger Berman managed account or product and do not reflect the fees and expenses associated with managing a portfolio. If such fees and expense were reflected, returns referenced would be lower. The model portfolio may not be appropriate for any investor. There may be material differences between the hypothetical backtested performance results and actual results achieved by actual accounts. Backtested model performance is hypothetical and does not represent the performance of actual accounts. Hypothetical performance has certain inherent limitations. Unlike actual investment performance, hypothetical results do not represent actual trading and accordingly the performance results may have under- or over-compensated for the impact, if any, that certain economic or other market factors, such as lack of liquidity or price fluctuations, might have had on the investment decision-making process or results if assets were actually being managed. Hypothetical performance may also not accurately reflect the impact, if any, of other material economic and market factors, or the impact of financial risk and the ability to withstand losses. Hypothetical performance results are also subject to the fact that they are generally designed with the benefit of hindsight. As a result, the back tested models theoretically may be changed from time to time to obtain more favorable performance results. In addition, the results are based, in part, on hypothetical assumptions. Certain of the assumptions have been made for modeling purposes and may not have been realized in the actual management of accounts. No representation or warranty is made as to the reasonableness of the assumptions made or that all assumptions used in achieving the hypothetical results have been stated or fully considered. Changes in the model assumptions may have a material impact on the hypothetical returns presented. There are frequently material differences between hypothetical performance results and actual results achieved by any investment strategy. Neuberger Berman did not manage any accounts in this manner reflected in the models during the backtested time periods shown.

INDEX DEFINITIONS

The **S&P 500 Index** consists of 500 U.S. stocks chosen for market size, liquidity and industry group representation. It is a market value-weighted index (stock price times number of shares outstanding), with each stock's weight in the Index proportionate to its market value.

The **MSCI World Index** is a broad, market value-weighted global equity index that represents large and mid-cap equity performance across 23 developed markets countries.

The **MSCI Emerging Markets Index** is a broad, market value-weighted index designed to represent the performance of large- and mid-cap securities in 26 Emerging Markets.

The **MSCI World MultiFactor Index** is designed to maximize exposure to four factors of value, momentum, quality and small size while maintaining a risk profile similar to that of the MSCI World Index. The Index was launched on March 19, 2015. Data prior to the launch is backtested data provided by MSCI.

The **CBOE S&P 500 PutWrite Index (PUT)** is designed to track the performance of a hypothetical portfolio that sells one-month, at-the-money S&P 500 Index put options against collateralized one- and three-month Treasury Bills. The number of puts sold varies from month to month, but is limited so that the amount held in Treasury Bills can finance the maximum possible loss from final settlement of the SPX puts. The underlying **S&P 500 Index** consists of 500 U.S. stocks chosen for market size, liquidity and industry group representation. It is a market value-weighted index (stock price times number of shares outstanding), with each stock's weight in the Index proportionate to its market value.

The **CBOE MSCI EAFE PutWrite Index (PXEA)** is designed to track the performance of a hypothetical passive investment strategy that collects option premiums from writing an at-the-Money put option on the MSCI EAFE Index on a monthly basis, and holds a rolling money market account invested in one-month T-bills to cover the liability from the short put option position. The underlying **MSCI EAFE Index** is a market-value weighted index designed to capture large- and mid-cap representation across 21 Developed Markets countries in Europe, Australasia and the Far East, excluding the U.S. and Canada.

The **CBOE MSCI Emerging Markets PutWrite Index (PXEF)** is designed to track the performance of a hypothetical passive investment strategy that collects option premiums from writing an at-the-money put option on the MSCI Emerging Markets Index on a monthly basis, and holds a rolling money market account invested in one-month T-bills to cover the liability from the short put option position. The underlying **MSCI Emerging Markets Index** is a market-value weighted index designed to represent the performance of large- and mid-cap securities in 26 emerging markets.

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