

# Navigating Federal Reserve Policy with IFED

January 2024

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## Abstract

Invest With the Fed, or “IFED”, is a quantitative equity strategy that selects portfolios positioned to prosper in the market environment signaled by Federal Reserve actions. IFED was designed by the principals of Economic Index Associates (“EIA”) all three of whom are experienced academics. The strategy selects and weights individual equities based on twelve factors in a bottom-up fashion. The strategy adjusts the weights of the twelve factors based on the market environment, as defined by Federal Reserve policy signals, in a top-down fashion. This integrated approach has generated material alpha over the last two decades in backtests and more importantly, out of sample over the last 3+ years. The strategy generalizes well across different equity sectors and mandates, as evidenced by the success of both the Large Cap and Low Volatility versions of the strategy. In this article, we will explore the potential benefits of the strategy on a standalone and portfolio basis.

**Key Words:** Factor investing, Multi-factor investing, Factor timing, Equity investing, Federal Reserve Policy, Optimization, Market Regimes

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## Introduction

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## IFED Model Introduction

The IFED model has its roots in decades of research and provides a unique solution to multi-factor investing. By combining popular factors with a conditioning approach based on the stance of the Federal Reserve, the strategy strikes a careful balance between relying on robust inputs that have shown explanatory power over many decades, with an ability to adapt to current market conditions.

- **Step One: IFED Scoring**

The IFED process begins by assessing the current market environment using EIA’s proprietary monetary indicator. The monetary indicator uses publicly available information such as the Federal Reserve’s target rate and discount window primary credit rate<sup>1</sup> to assess whether the market is likely in an Expansive, Restrictive or Indeterminate environment. Table 1 provides descriptions of the three environments described by EIA’s monetary indicator. Depending on the environment, EIA assigns different weights to the twelve firm-specific metrics, which are then used to calculate a score for each security in the universe. For example, the Value Effect may receive a lower weight relative to the other factors during an Expansive market environment, or Momentum might receive a lower weight during an Indeterminate market environment.

	IFED Market Environment		
Characteristic	Expansive	Indeterminate	Restrictive
Federal Reserve Policy Signal	Easing	Mixed	Tightening
Federal Reserve Priority	Promoting full employment, i.e., encouraging economic growth	No signaled priority: Fed takes a balanced approach to its objectives	Maintaining price stability i.e., keeping inflation under control
IFED Portfolio Emphasis	Equities with strong profit margins and growth potential	Equities with financial stability and attractive valuations	Equities with strong balance sheets and market stature

Table 1: Source: Economic Index Associates

<sup>1</sup> The discount rate is the interest rate charged to commercial banks and other depository institutions on loans they receive from their regional Federal Reserve Bank’s lending facility – the discount window. The Federal Reserve Banks offer three types of credit to depository institutions: primary credit, secondary credit, and seasonal credit, each with its own interest rate. All discount window loans are fully secured. Source: Federal Reserve

- **Step Two: Rank and Weight**

After the market environment has been identified and each security in the universe has received a composite score based on the 12 factors, each stock is ranked by its score. The top n (depending on mandate) securities are selected and then weighted by their scores. The final weights are subject to constraints, depending on the mandate of the strategy.

- **Step Three: Rebalance Signal**

The strategy will rebalance when the Fed changes its policy, thereby signaling a change in the market environment, and thus triggering a reconstitution of the Index. For the period beginning in January 1999 and ending September 2023, the strategy has rebalanced 35 times due to changes in the market environment. To avoid the composition of the portfolio becoming 'stale' in a year without a change in the market environment, the strategy will rebalance in June if there has not been a change in Fed policy for the year.

## **Summary of Relevant Literature**

The extensive research conducted by Jensen, Garcia-Feijoo, Johnson, and their collaborators revolves around the complex interrelation between Federal Reserve (Fed) monetary policy and its multifaceted impacts on different aspects of the financial market. Their investigations encompass a comprehensive analysis of how expansive and restrictive monetary policies influence stock returns, industry sectors, asset allocation strategies, and portfolio diversification. Moreover, they delve into the effects of monetary conditions on commodities, emerging market equities, managed futures, and a range of asset classes, uncovering strategies that optimize investments within diverse monetary landscapes.

In their foundational work, Jensen and Johnson (1995) established a strong correlation between changes in discount rates and stock market performance. The study showed that stock returns following discount rate decreases exhibited higher returns and lower volatility compared to returns following rate increases. Building upon this research, Jensen, Mercer, and Johnson (1996) provided additional evidence regarding the significant influence of the monetary environment on security returns. They not only highlighted the potential of monetary policy as a predictor of stock returns, but also emphasized the limited predictive power of other forecasting variables in specific monetary regimes.

The exploration into the relationship between monetary policy and financial markets continued, with subsequent studies focusing on the small cap and value effects (Jensen, Mercer, & Johnson, 1997) and the effects of monetary policy on industry sectors (Jensen, Johnson, & Bauman, 1997). These studies revealed variations in the statistical and economic significance of these effects during different monetary policy phases.

As the research progressed into the new millennium, studies such as those by Johnson, Buetow, and Jensen (2000) and Jensen, Johnson, and Mercer (2000) expanded the understanding of the implications of monetary policy on equity market returns and the role of commodity futures as portfolio diversifiers. They highlighted that the benefits of including commodity futures in portfolios were most prominent during periods of restrictive monetary policy.

The subsequent studies explored industry sensitivity to monetary policy (Johnson, Jensen, & Mercer, 2001), tactical asset allocation strategies for individual investors (Buetow & Johnson, 2001), integration of emerging market equities into portfolios (Conover, Jensen, & Johnson, 2002), and the diversification benefits of managed and unmanaged futures (Jensen, Johnson, & Mercer, 2002). These studies contributed to a deeper understanding of the intricate relationship between monetary policy and the financial landscape.

In the realm of bonds, Johnson, Buetow, Jensen, and Reilly (2003) indicated that it may be preferential to invest in T-bills over corporate bonds during restrictive monetary environments. The subsequent years saw an emphasis on analyzing stock returns and exploring sector rotation strategies (Conover, Jensen, Johnson & Mercer, 2008), along with investigating asset classes for hedging potential (Garcia-Feijoo, Jensen & Johnson, 2012). Finally, Garcia-Feijoo, Jensen & Jensen (2018) advanced the understanding of monetary policy impact by delving into the equity momentum factor in various funding states, finding that momentum tends to be more effective during periods of restrictive policy.

This progression of research has driven a significant evolution in understanding of the interplay between monetary policy and financial markets.

## Data and other considerations

For this review we will perform analysis on two versions of the IFED strategy, namely the Nasdaq IFED US-Large Cap™ Index (IFEDL™) and Nasdaq IFED US Large-Cap Low Volatility™ Index (IFEDLV™), both of which include U.S. stocks. We will refer to the indexes as IFED-L and as IFED-LV, respectively. For all analysis, we will use monthly returns from April 2002 through September 2023, unless otherwise specified. All data is sourced from Nasdaq or Bloomberg, unless otherwise specified. Data for the Fama French factors is sourced from Kenneth French's website.

The Nasdaq IFED US Large-Cap Index (Nasdaq IFEDL™) is designed to maximize exposure to those U.S. large-cap equities best positioned to benefit from prevailing market conditions. As the index contributor, Economic Index Associates (EIA) utilizes a combination of Federal Reserve policy signals and key firm metrics to select index components via a transparent and rules-based strategy.

The Nasdaq IFED US Large-Cap Low Volatility Index (Nasdaq IFEDLV™) is designed to maximize exposure to those U.S. large-cap, low volatility equities best positioned to benefit from prevailing market conditions.

## Full Sample Performance Review

In this section, we will review the performance of the strategies for the full historical sample.

Over the full sample the IFED strategy has generated compelling returns – with IFED-L returning 10.2%, and IFED-LV returning 11.4% on an annualized basis. These returns have been generated without taking on excessive additional risk, as Sharpe ratios of both strategies exceed those of their benchmarks, and the maximum drawdowns are in-line with those of their benchmarks, but smaller when adjusted for the slightly higher volatility of each index. Perhaps more impressive than the Sharpe ratios are the large, annualized alphas and information ratios both indexes have generated versus their respective benchmarks. The IFED Large Cap strategy delivered annualized alpha of nearly 3%, and an information ratio of 0.45 versus the S&P 500, while the IFED Low Volatility strategy had an alpha of more than 6% and information ratio of 1.28 versus its benchmarks.

Full Sample   April 2002 - Sep 2023   Monthly Data		
	IFED-L	IFED-LV
AROR	10.2%	11.4%
SD	18.0%	12.7%
SR	0.57	0.89
Sortino	0.27	0.40
PenRisk	16.8%	8.6%
MaxDD	53.1%	40.7%
CDaR	22.2%	11.4%
MDD/SD	2.94	3.20
END\$	\$ 8.12	\$ 10.14
RSQ	81.4%	84.3%
SKEW	-86.3%	-90.6%
MDD/AR	518.6%	357.3%

Table 2: Full-sample performance

Full Sample   April 2002 - Sep 2023   Monthly Data		
	S&P 500	S&P 500 LV
AROR	7.1%	4.8%
SD	15.3%	11.6%
SR	0.47	0.42
Sortino	0.22	0.19
PenRisk	21.7%	16.5%
MaxDD	53.2%	40.2%
CDaR	21.6%	16.9%
MDD/SD	3.48	3.47
END\$	\$ 4.40	\$2.75
RSQ	82.1%	89.3%
SKEW	-75.7%	-103.4%
MDD/AR	746.1%	834.6%

Table 3: Full-sample performance

This performance is quite impressive, and economically very significant. Unfortunately, long-term outperformance can often come at the expense of short-term underperformance, or may be the result of a relatively short, single period of strong returns. A simple way to assess this is to look at the long term cumulative relative returns of a strategy vs. its benchmark, which we do in Figure 1.

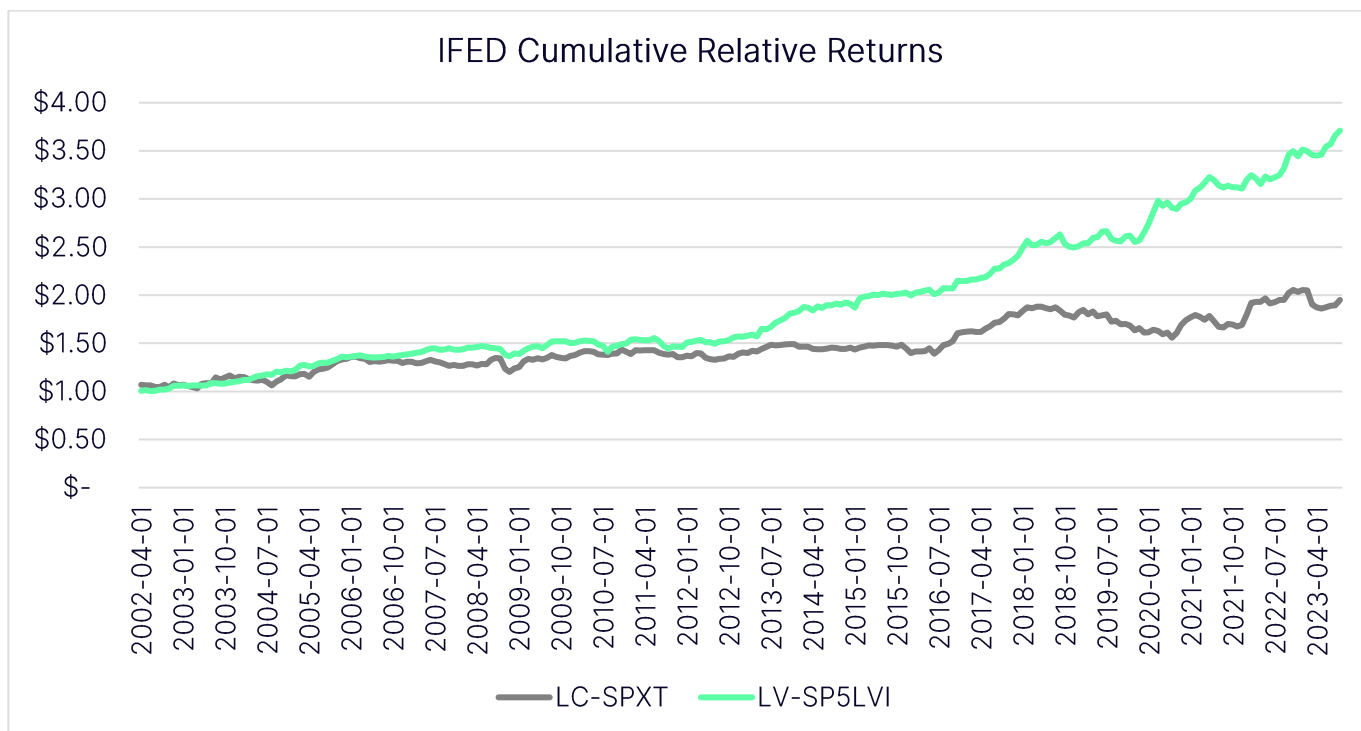


Figure 1: Cumulative relative returns vs. benchmarks

Another, perhaps more sophisticated method for checking the robustness of an edge is to consider rolling relative returns. In Table 4 we share the statistics on outperformance of each strategy versus its benchmark for several rolling period lengths, ranging from individual months to rolling 5-year periods. These tables demonstrate that the strategies have a consistent advantage, or 'edge'.

Rolling Period Outperformance		
Number of Months	IFED-L	IFED-LV
1	55%	66%
3	59%	73%
12	61%	88%
24	69%	94%
36	78%	98%
48	94%	100%
60	94%	100%

Table 4: Rolling period outperformance

As a final consideration, one might believe that it is possible to ‘time’ an allocation to a strategy, either adjusting exposure or moving in and out of the allocation entirely. Serial correlation, or autocorrelation, measures the dependence between a time series and itself at various lags. If a time series exhibits significant positive or negative autocorrelation, there might be a way to time an allocation to the underlying asset. In Figure 2, we plot the autocorrelation function, or “acf”, of the *relative* returns of each index and can see that none of the time series exhibits meaningful autocorrelation over lags of up to 36 months, or three years. [Nota Bene: the acf of 1 is the autocorrelation with no lag, hence it is always 1.] This suggests it is very unlikely that one could time an allocation to an IFED strategy with any economic benefit.

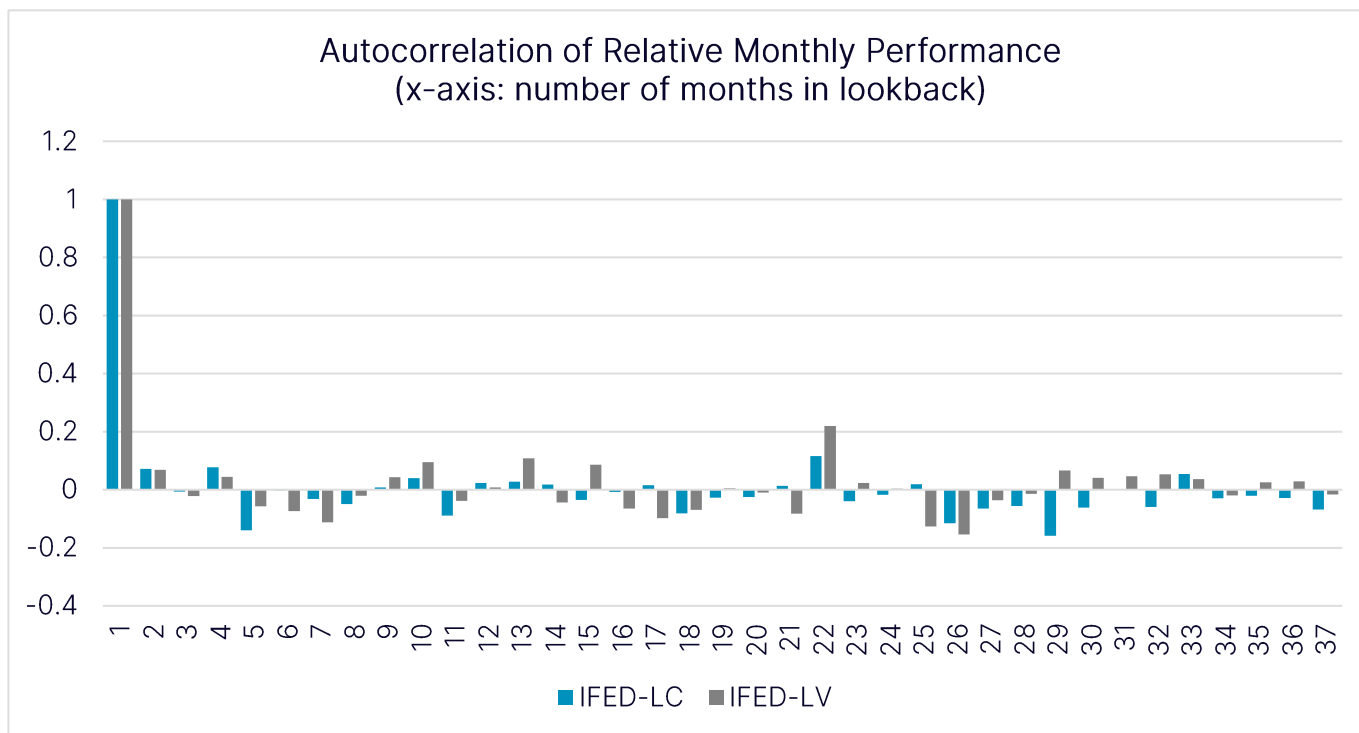


Figure 2: Autocorrelation of relative performance vs. benchmarks

### Risk Analysis and Multiple Regression

From a risk perspective, the IFED Indexes outperform their benchmarks, but without the cost of materially greater risk. Indeed, in many dimensions the IFED Indexes express less risk than their benchmarks. Both strategies have higher Sharpe ratios than their benchmarks, as well as higher Sortino ratios. The Sortino ratio considers semi-variance or semi-deviation, or the volatility of negative returns, and is preferred by many investors because it does not penalize positive or upside volatility like the Sharpe ratio. Maximum

drawdowns are roughly equal for the strategies and their benchmarks, however Conditional Drawdown at Risk, or “CDaR”, is materially lower for the low volatility strategy. CDaR measures the average of multiple drawdowns, usually the worst 5%, so it is believed to be a slightly more realistic metric for assessing drawdown risk. “Penalized Risk” is a more nuanced measure which attempts to factor both the duration and unexpected magnitudes of drawdowns into account and is lower for each Index.

From another angle, many investors prefer to consider the upside and downside capture of an investment. Ideally, an investment will capture all or more of a benchmark’s upside, and less of the benchmark’s downside. We can see in Table 5 that both versions of the IFED strategy capture more than 110% of the upside of their benchmark, and while IFED-L has a down capture of 104%, IFED-LV has a down capture of only 83%. In summary, the IFED strategies have outperformed their benchmarks, with similar or even less risk.

	IFED-L	IFED-LV
Up Capture	117%	123%
Down Capture	104%	83%

Table 5: Upside & downside capture

To investigate potential drivers of risk, we performed a regression analysis using a six-factor model to uncover primary risk and return drivers of the two indexes. The model uses the Market Factor (“Mkt.RF”), Size Factor (“SMB”), Value Factor (“HML”), Profitability Factor (“RMW”), Investment Factor (“CMA”) and Momentum Factor (“MOM”). We used monthly observations and sourced all factor data from Kenneth French’s website.

Multiple Regression Coefficients		
	IFED-L	IFED-LV
(Intercept)	0.0341	0.0387
Mkt.RF	1.0331	0.8131
SMB	0.1086	-0.0719
HML	0.2447	0.0853
RMW	-0.1341	0.2134
CMA	-0.0156	0.1930
MOM	0.0265	0.0799

Table 6: Multiple regression

\*Intercept (Alpha) is annualized.

Bold indicates significance at 5% level.

The most important finding from this analysis is that the indexes generate abnormal returns (alpha) with respect to our six-factor model, suggesting the IFED indexes deliver value beyond what can readily be accessed via simple factor portfolios. IFED-L generates an annualized alpha of 3.4%, and IFED-LV generates an alpha of 3.9%. The alphas are significant at a 5% cutoff. Beyond significant alpha, there are differences between the strategies. The Large Cap version loads positively on Size and Value and negatively on Profitability, with negligible loadings on Investment and Momentum, while Low Volatility loads positively on all the factors except for the Size factor. This differentiation suggests that there may be some diversification benefit to be achieved by combining allocations to the two strategies.



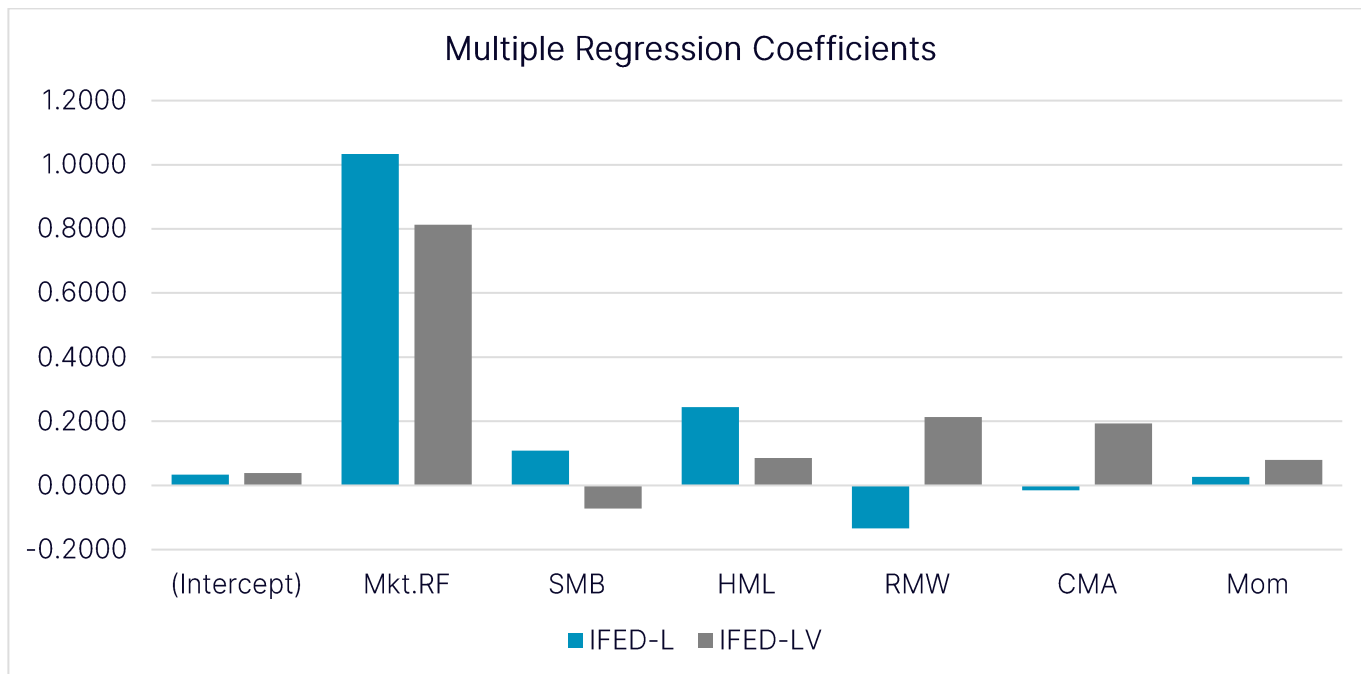


Figure 3: Multiple regression coefficients

### Boosting Confidence – Block Bootstrap Simulation

These results are impressive, and it is natural to wonder if they could be the result of luck, due to a fortunate sequence of returns. Thanks to the increasing power of computers, not to mention cloud computing capabilities, we can simulate ‘alternative histories’ of a strategy and benchmark to see how things might have turned out if markets had evolved differently. Many investors are familiar with the use of Monte Carlo Simulation for financial planning purposes. For this exercise, we will use a different approach called the block bootstrap to generate time series that are very similar to, but not quite the same as, our Indexes and their benchmarks.

A block bootstrap generates new time series by randomly sampling blocks of time until the new (replicate time series) is of the same length as the original. The block bootstrap is distinct from a regular bootstrap in the sense that blocks of time are sampled rather than individual observations, in the hope of preserving any important features of the time series. This approach has potential benefits vs. Monte Carlo as we do not have to assume any parameters such as mean or volatility, however the choice of block size is a key input and does not have any consensus theory underpinning its selection. To alleviate this shortcoming, we can perform multiple simulations using different block sizes and observe whether the results are similar or not.

For our simulation, we used monthly return data and block sizes of three, six and twelve months. For each block size, we performed 1,000 bootstraps, creating 1,000 alternative histories for the Index and its benchmark, and stored the information ratios of the simulated index vs. its simulated benchmark. What this does is assess the likelihood of ‘sequencing luck’, as over the course of one thousand simulations, it is likely that some Index time series that aggregate many of the ‘bad’ blocks and few of the ‘good’ blocks will be compared with benchmark time series that do the opposite. We may then consider the distribution of outcomes, in this case the information ratios, and see how frequently our Index outperforms.



Distribution of Simulated IRs		
	IFED-L	IFED-LV
Min	-0.56623	-0.4828
Quartile 1	-0.03552	0.2201
Median	0.12892	0.3727
Mean	0.13056	0.3774
Quartile 3	0.28564	0.5411
Max	0.82104	1.2510

Table 7: Distribution of simulated Information Ratios – 12 month blocks

For both Indexes, the simulated time series generate positive information ratios in more than 50% of samples, or more than 750 times out of 1,000. IFED-LV generates positive information ratios in more than 75% of samples, and IFED-L generates positive information ratios in nearly 75% of samples. In Table 7 and Figure 4 we tabulate the statistics for both indexes for the 12 block simulations, as well as a histogram of the results for IFED-LV. Results for three and six-month blocks were very similar and omitted for brevity. In the histogram, the vertical line denotes where the ratios turn from negative to positive.

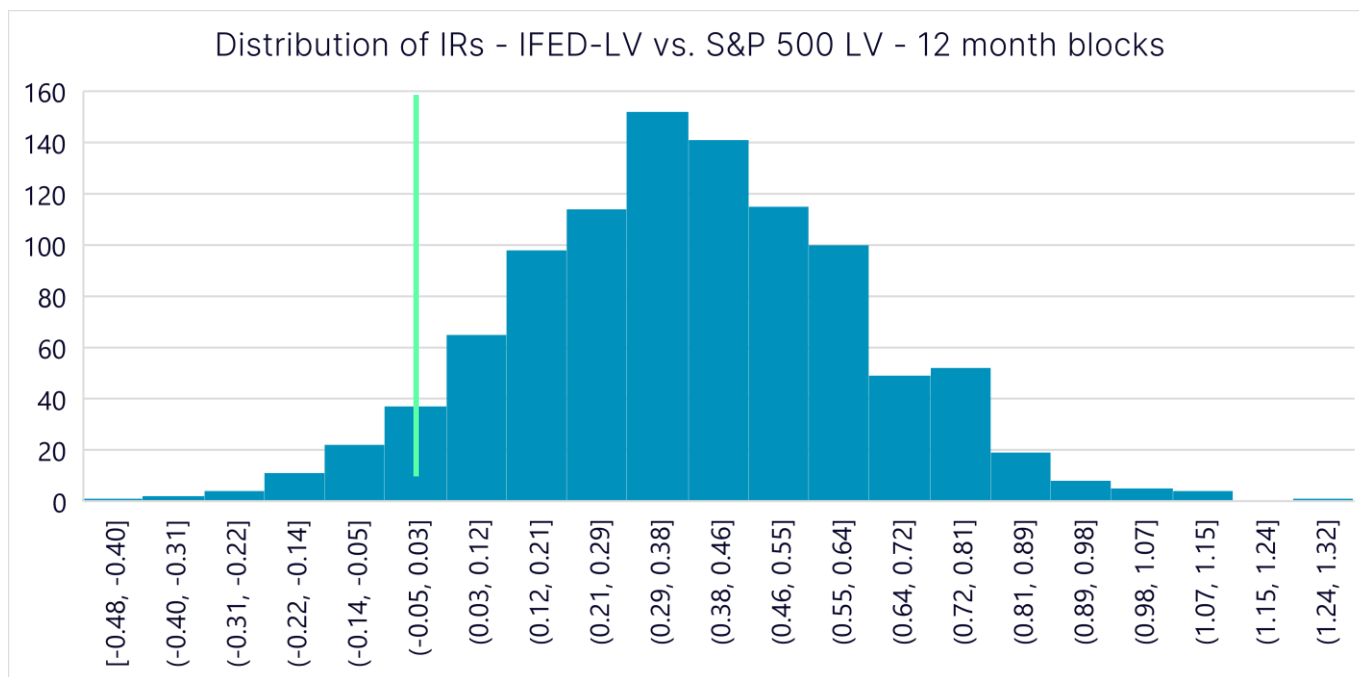


Figure 4: Distribution of information ratios for block bootstrap simulation

These results strongly suggest that the outperformance of IFED-L and IFED-LV vs. their respective benchmarks is unlikely to be due to fortunate sequences of returns or “pure luck”.

## Regime Performance Review

The IFED process aims to identify Fed policy regimes and position the portfolio accordingly. It is fair to consider whether the performance of the strategy is tied to a single regime, or if it outperforms over all regimes. As covered earlier, the three IFED regimes are Expansive, Indeterminate and Restrictive and reflect different stances on the part of the U.S. Federal Reserve. A robust strategy would perform well across regimes, while an over-optimized strategy might perform well only within one regime.

For this analysis, we simply subset monthly returns of each strategy and benchmark based on the regime, creating three timeseries of monthly returns for each regime.

We can see clearly that the performance of the IFED strategy is not dominated by any single IFED regime, and both indexes generate positive outperformance across the three regimes. In Table 8 we can see that the two strategies generate positive information ratios across the full sample covering all regimes. The measures are roughly the same in all regimes, with the Large Cap strategy generating a slightly negative information ratio during the Indeterminate regime. Low Volatility delivers high information ratios across all three regimes, with the lowest occurring during the Expansive regime.

Information Ratios	IFED-L	IFED-LV
Expansive	0.5528	0.8883
Indeterminate	-0.0143	1.2521
Restrictive	0.6883	1.4938
Full Sample	0.4478	1.2825

Table 8: Information ratios for each strategy during regimes

Viewed from a different perspective, performance does not appear to be tied to bull or bear market conditions. In Figure 5, we again plot the cumulative relative performance of each strategy, this time with vertical bars indicating periods where the 12-month cumulative performance of the S&P 500 is negative. We use the 12-month cumulative performance as a proxy for bull or bear markets, and the relative performance of IFED strategies is not tied directly to bull or bear markets, either.

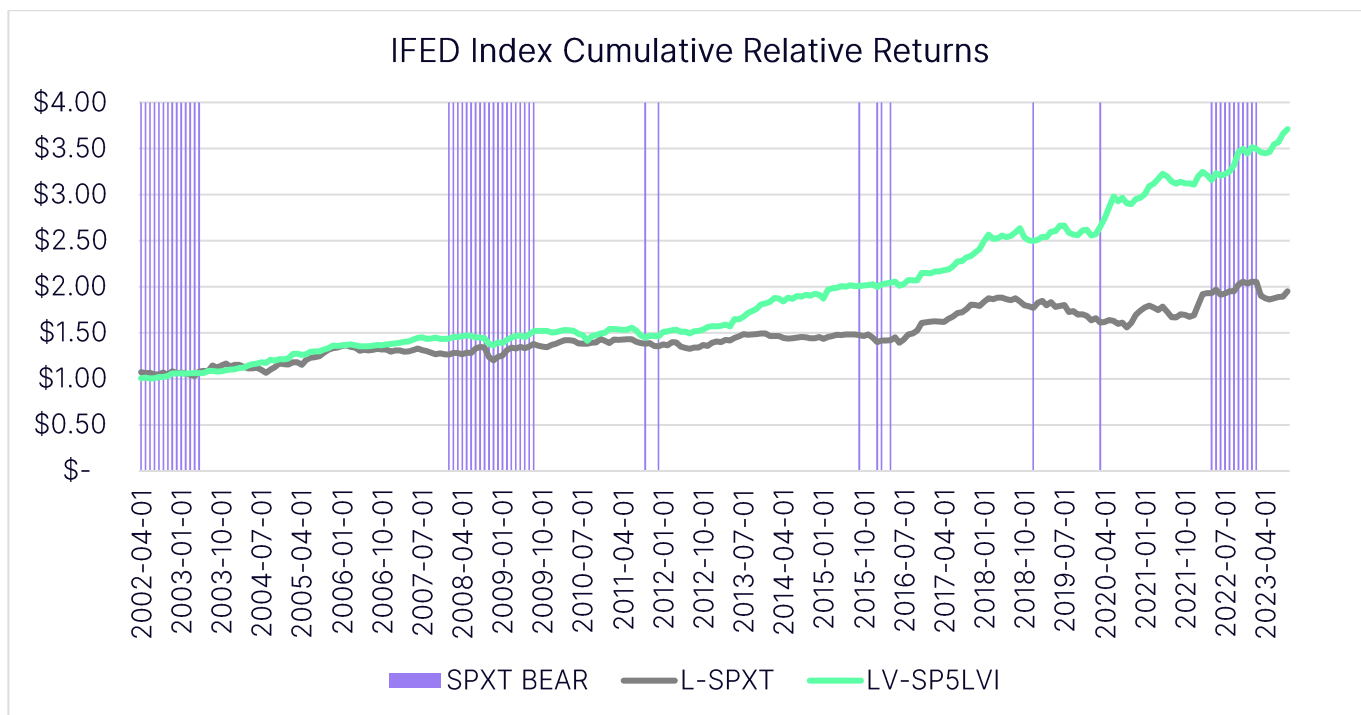


Figure 5: Relative performance with bull/bear mkt overlay

### Portfolio Analysis

IFED historically could have added a significant boost to a stock/bond portfolio, with a standard benchmark being a 60/40 blend of the S&P 500 and the Bloomberg Aggregate Bond Index. Historically, the best improvements came from a full replacement of the S&P 500 with an IFED strategy, however it is unlikely most investors will go “all in” in this fashion. To that end, we will also look at incremental improvement as portfolio weights shift from 100% S&P 500 to 100% IFED.

For the period spanning from early 2000 until September 2023, a full replacement of the S&P 500 with either IFED index yields a striking improvement in both raw and risk-adjusted returns. An investor would have enjoyed more than a 50% improvement over the cumulative return of the base 60/40 portfolio, with similar or less risk. This replacement would have steadily added value over time, as can be seen in Figure 6, which plots the cumulative relative performance of the three alternative 60/40 portfolios through time. L-REL refers to a 60/40 portfolio that has 60% in IFED-L and 40% in bonds. LV-REL is a 60/40 portfolio with 60% in IFED-LV, and EW-REL reflects a 30% IFED-L, 30% IFED-LV and 40% bonds allocation.

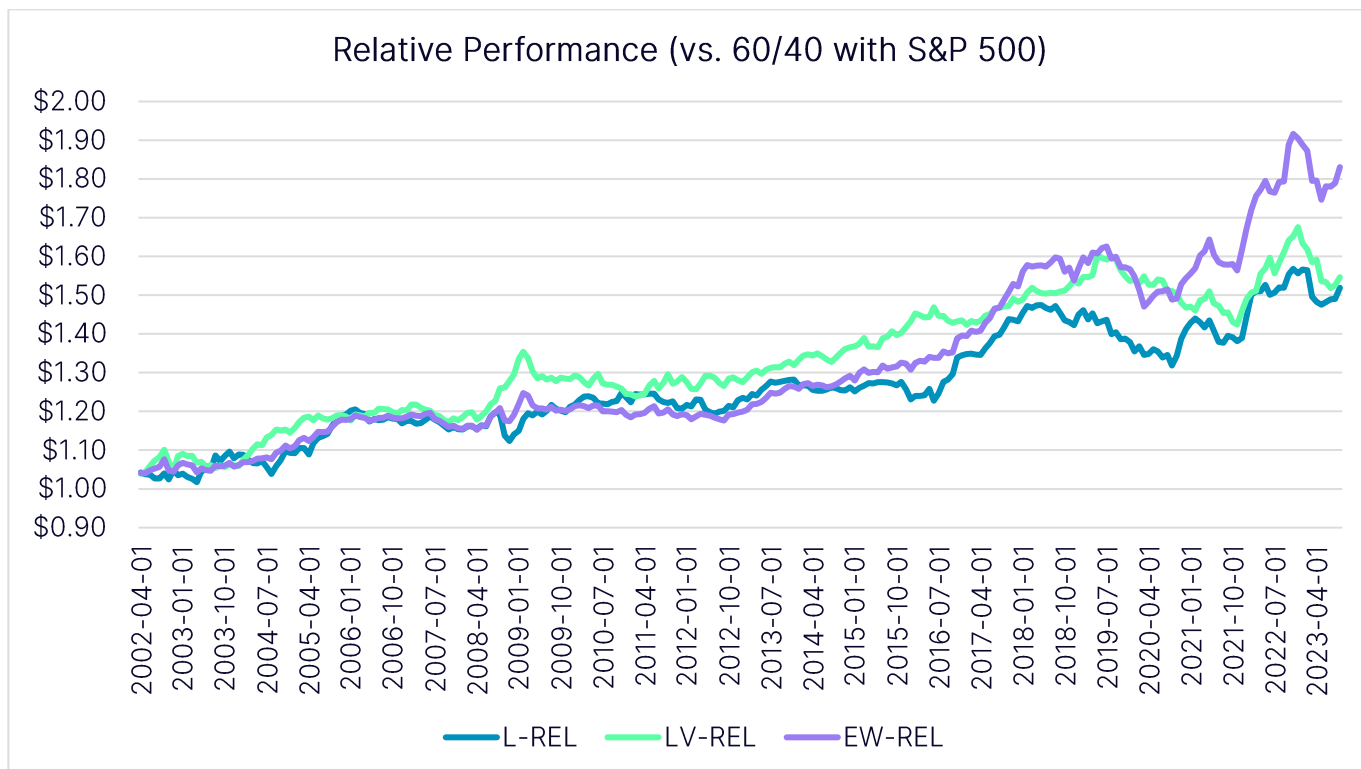


Figure 6: Relative cumulative performance of IFED 60/40 portfolios

Once again, we examined the autocorrelation of relative performance, and found there is no material autocorrelation in the monthly relative performance of the IFED versions of the 60/40 portfolio to the S&P 500 version (chart omitted to preserve space). These results argue strongly for there not being a possibility of ‘timing’ an allocation to these portfolios or switching between an IFED strategy and the S&P 500 within the portfolio.

Improvements would not have required a full replacement of the S&P 500, however. As noted earlier, the two IFED strategies are not perfectly correlated, and had different loadings in our six-factor multiple regression model. An investor might allocate equally across both ‘flavors’ in order to avail themselves of a bit of diversification while minimizing the chance of ‘selection regret.’ In Figure 7 we see the changes in Sharpe Ratio for portfolios with increasing allocations to an equal weight portfolio of the IFED Indexes (with matching reductions in allocations to the S&P 500). The Sharpe Ratio monotonically improves as the IFED weight increases.

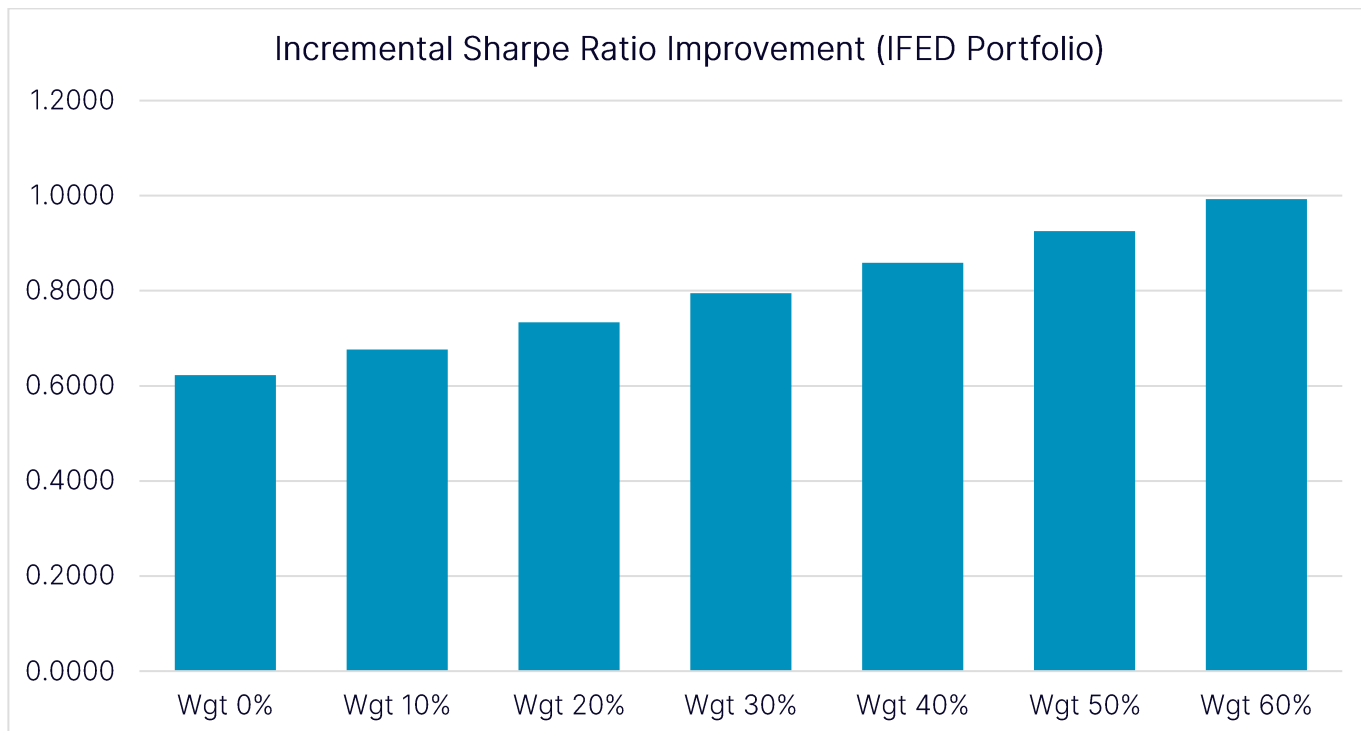


Figure 7: Incremental Sharpe Ratio improvements to 60/40 portfolios

### Limitations and Future Considerations

While the IFED process appears to provide a robust and enduring edge relative to US Large Cap stocks, that edge is not perfect. There have been and will be periods in which the strategy underperforms. For the three years ending September 30, 2023, both IFED Indexes have outpaced their benchmarks by a very healthy amount. Year-to-date, however, is a different story. IFED Large Cap has lagged the S&P 500 by roughly 4 percent. The Low Volatility Index has been flat, while its benchmark lost more than 8%: an encouraging relative return.

Cumulative Price Returns Ending 9/30/2023				
	IFED-L	IFED-LV	SPXT	SP5LVI
YTD	8.2%	-1.2%	12.3%	-8.4%
3 Years	59.6%	35.3%	27.5%	5.9%

Table 9: Cumulative Returns

Looking at historical periods of underperformance is markedly different from living through a period of underperformance with money invested. A few quarters of underperformance may be sufficient to cause investors to question their investment and consider pulling out. Indeed, referring to our rolling performance tables, historically the IFED Large Cap strategy has underperformed the S&P 500 in 41% of rolling quarters and 39% of rolling annual observations. During these periods, it can be helpful to recall that while the strategy underperforms in roughly 1/3 of these shorter periods, the strategy has outperformed in most longer periods exceeding three years.

## Conclusion

Invest With the Fed, or “IFED”, is a quantitative equity strategy that selects portfolios positioned to prosper in the market environment signaled by Federal Reserve actions. The strategy selects and weights individual equities based on twelve factors in a bottom-up fashion. The strategy adjusts the weights of the twelve factors based on the market environment as defined by Federal Reserve policy signals, in a top-down fashion. This integrated approach has generated material alpha over the last two decades in backtests and, more importantly, out of sample over the last 3 years.

While the Nasdaq IFED US Large-Cap Index has lagged its benchmark this year, the performance is still well within expectations we might form from historical performance. Furthermore, the Nasdaq IFED US Large-Cap Low Volatility Index has substantially outperformed its benchmark this year.

Both strategies have exhibited a significant and robust edge versus benchmarks for more than 20 years providing a powerful complement to blended portfolios of U.S. stocks and bonds. The edge has been robust to different market regimes, and the results of a bootstrap simulation suggest that this edge is not the result of luck.

## Appendix 1: Additional Data

### Single Factor Model | April 2002 - September 2023 | Monthly Returns

	IFEDL vs. SPXT	IFEDLV vs. SP5LVI
Alpha	0.0022	0.0052
Beta	1.0917	1.0056
Beta+	1.0669	0.9488
Beta-	1.1038	1.0001
R-squared	0.8578	0.8383
Annualized Alpha	0.0264	0.0639
Correlation	0.9262	0.9156
Correlation p-value	0	0
Tracking Error	0.0694	0.0511
Active Premium	0.0311	0.0656
Information Ratio	0.4478	1.2825
Treynor Ratio	0.0937	0.1131

Table10: Single factor model risk

### Multiple Regression - T-stats

	IFED-L	IFED-LV
(Intercept)	2.72	3.61
Mkt.RF	39.57	36.39
SMB	2.44	-1.89
HML	5.66	2.30
RMW	-2.52	4.68
CMA	-0.25	3.56
Mom	1.05	3.71

Table 11: T-stats for multiple regressions

IFED AND STANDARD 60/40 PORTFOLIOS				
	SPXT	IFED-L	IFED-LV	IFED-EW
AROR	0.0591	0.0791	0.0829	0.0890
SD	0.0949	0.1097	0.0799	0.1041
SR	0.6227	0.7211	1.0382	0.8548
Sortino	0.2738	0.3222	0.4639	0.3822
PenRisk	0.1026	0.0698	0.0404	0.0602
MaxDD	0.3381	0.3255	0.2331	0.2917
CDaR	0.1216	0.1122	0.0716	0.1003
MDD/SD	3.5611	2.9680	2.9187	2.8022
END\$	3.4378	5.1366	5.5429	6.2507
RSQ	0.8984	0.8942	0.9104	0.8663
SKEW	-0.8003	-0.9091	-0.9849	-0.8754
MDD/AR	5.7201	4.1154	2.8117	3.2775

Table 12: 60/40 portfolio stats (40% to aggregate bonds, IFED-EW is an equal weight allocation to the two IFED strategies)

## Appendix 2: References and suggested reading

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### Appendix 3: Index Information and Methodologies

Nasdaq IFED US Large Cap Index:

<https://indexes.nasdaqomx.com/Index/Overview/IFEDL>

Nasdaq IFED US Large-Cap Low Volatility Index:

<https://indexes.nasdaqomx.com/Index/Overview/IFEDLV>

### Appendix 4: Products tracking the IFED Indexes

Name	Symbol	Sponsor
ETRACS IFED Invest with the Fed TR Index ETN	IFED	UBS
ETRACS 2x Leveraged IFED Invest with the Fed TR Index ETN	FEDL	UBS



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