

## The NYSE FANG+ Index: High Performance at Controlled Risk

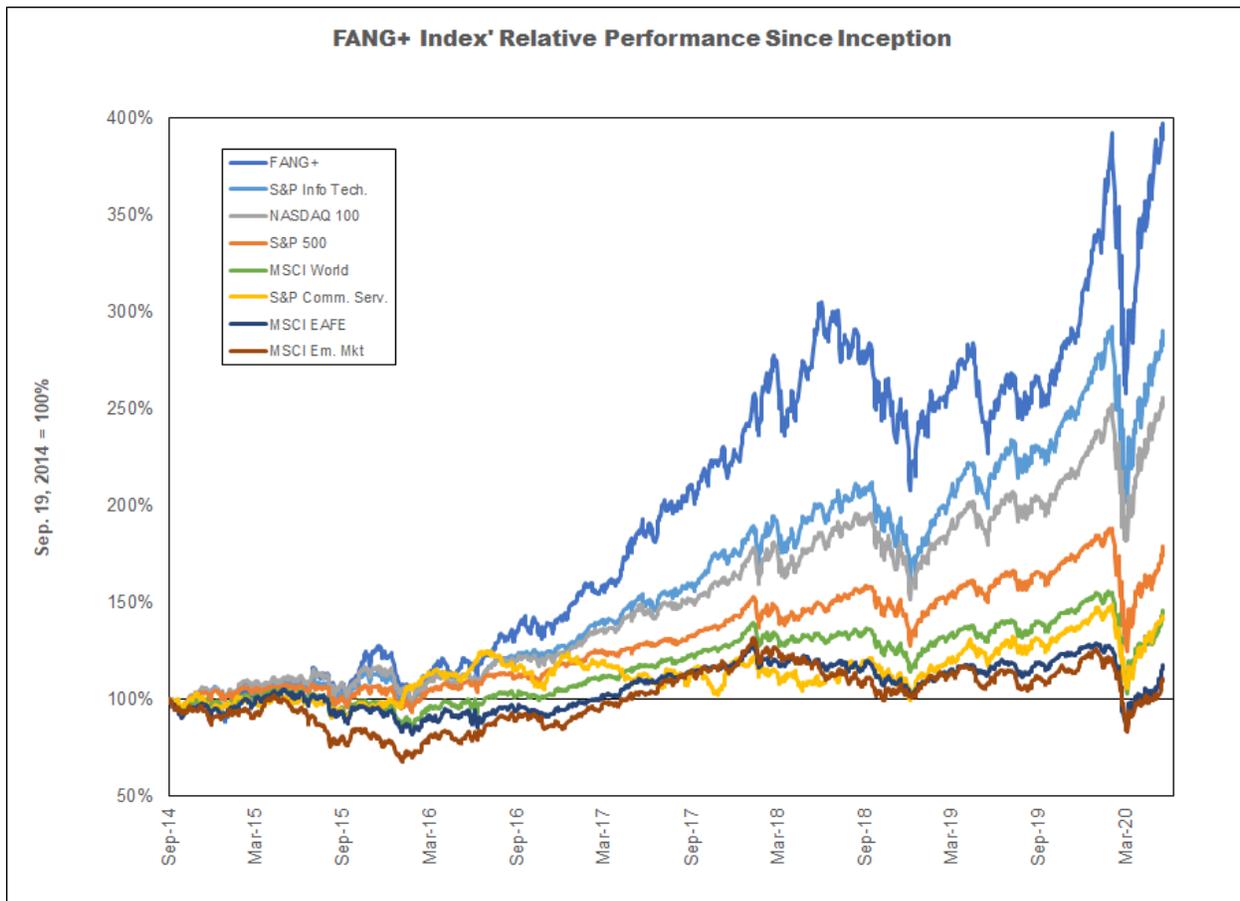
Experienced investors often shy away from markets perceived as being speculative playthings. Normally this is a useful instinct as market history is filled with manias followed by panics and crashes. What if, however, we could invest in a concentrated but still broad-based index whose performance since its September 2014 inception exceeded that of common and related investment benchmarks but with very controlled levels of risk?

The NYSE FANG+ is just such an index. It is comprised at present of ten highly liquid stocks representative of the information technology and Internet/media sectors, Facebook®, Apple®, Alphabet®, Amazon.com®, Alibaba®, Netflix®, NVIDIA®, Baidu®, Tesla® and Twitter®. It is an equal-weighted index rebalanced on the March/June/September/December quarterly expiration cycle; a full description of the methodology is available at [www.theice.com/publicdocs/data/NYSE\\_FANGplus\\_Index\\_Methodology.pdf](http://www.theice.com/publicdocs/data/NYSE_FANGplus_Index_Methodology.pdf).

Investment and trading opportunities are created by differences in performance, by risk characteristics and by responses to external factors. As all of these obtain for the NYSE FANG+ Index, which makes it highly suitable for those seeking both an outright trading vehicle and for those looking to trade the spread between it and indices such as the S&P 500 and NASDAQ 100.

### Risk and Performance

Let's look at the performance on a total return basis in U.S. dollars of the NYSE FANG+ Index relative to a set of widely accepted investment benchmarks over the September 19, 2014 – June 5, 2020 period. These will include the S&P 500, S&P 500 Information Technology, S&P Communications Services, NASDAQ 100, MSCI World, MSCI EAFE and MSCI Emerging Market indices.



Source: Bloomberg Financial

The strong outperformance of the NYSE FANG+ Index, a period return of 397 percent versus 290 percent for its nearest competitor, the S&P 500 Information Technology index, might be dismissed as small-sample bias or even as the singular result of strong short-term performances by individual stocks, but closer examination of performance data tell a different story.

Let's look at standard risk and return measures for this set of indices. As expected from the performance data, the NYSE FANG+ Index has the highest average daily return of 0.096 percent, well above the 0.074 percent registered for the S&P 500 Information Technology index. A similar hierarchy applies for the standard deviation of daily returns, 1.632 percent for the NYSE FANG+ Index versus 1.443 percent for the S&P 500 Information Technology index. However, the Sharpe ratio of 0.054 for the NYSE FANG+ Index versus 0.043 for the S&P 500 Information Technology index indicates investors were rewarded for assuming this greater variance of returns.

Perhaps this is due to both the downside and upside variance of returns being greater for the NYSE FANG+ Index than for any of the other indices examined, 0.012 and 0.009 percent, respectively. The higher downside variance of returns is consistent with the common assumption strong rallies produce strong retracement. The higher upside variance of returns for a high-performing index simply means the dollar value of higher variance for the NYSE FANG+ Index produces higher absolute returns.

Surprisingly, the skewness of returns for the NYSE FANG+ Index, while more negative than that for the NASDAQ 100, S&P 500 Information Technology and MSCI EM indices, is less negative than the skewness of returns for the S&P 500 and both the MSCI World and EAFE indices. This may be attributable to the NYSE FANG+ Index' lower exposure to the weak-performing sectors in finance, energy and basic materials prevalent since September 2014.

**September 2014 - June 2020**

	FANG+	S&P 500	NASDAQ 100	S&P Telecom	S&P Info. Tech.	MSCI World	EAFE	EM
Average Return	0.096%	0.040%	0.065%	0.025%	0.074%	0.026%	0.011%	0.007%
Std. Dev. Of Returns	1.632%	1.168%	1.326%	1.230%	1.443%	0.956%	0.940%	1.032%
Sharpe Ratio	0.054	0.028	0.043	0.014	0.046	0.019	0.003	-0.001
Skewness Of Returns	0.872	0.980	0.732	0.592	0.646	1.540	1.434	0.781
Downside Var.	0.012%	0.006%	0.008%	0.006%	0.009%	0.004%	0.004%	0.005%
Upside Var	0.009%	0.005%	0.006%	0.005%	0.008%	0.003%	0.003%	0.003%

Now let's look at a correlation matrix of returns over this period to identify where the strength of similarity between the indices.

**Correlation of Returns**  
**September 2014 - June 2020**

	FANG+	S&P 500	NASDAQ 100	S&P Telecom	S&P Info. Tech.	MSCI World	EAFE	EM
FANG+	1.000							
S&P 500	0.790	1.000						
NASDAQ 100	0.898	0.941	1.000					
S&P Tel.	0.602	0.777	0.728	1.000				
S&P Info. Tech.	0.869	0.941	0.982	0.712	1.000			
MSCI World	0.744	0.935	0.860	0.712	0.863	1.000		
EAFE	0.429	0.561	0.475	0.408	0.482	0.808	1.000	
EM	0.473	0.511	0.466	0.344	0.469	0.727	0.766	1.000

The NYSE FANG+ Index clearly is more than just a clone of the NASDAQ 100 or S&P 500 Information Technology indices; its correlations of returns against these two indices, 0.898 and 0.869, respectively, are lower than the correlations of returns for the S&P 500 against those two indices, 0.941 and 0.941, respectively.

A similar argument applies for international diversification. The correlations of returns for the NYSE FANG+ Index against the MSCI World, MSCI EAFE and MSCI EM of 0.744, 0.429 and 0.473 are lower than those for the S&P

500<sup>®</sup> of 0.935, 0.561 and 0.511, respectively. This is unsurprising given the relative underperformance of non-U.S. markets since September 2014.

### External Market Factors

Performance is affected by multiple intrinsic factors, such as market capitalization and price/book ratio and other value measures. Let's focus here on some external market factors and see how they relate to each of the stock indices before us. These will include the ICE U.S. Dollar Index<sup>®</sup> (USD<sup>®</sup>), the yield to maturity for two- and ten-year Treasuries (UST-2 and UST-10), a measure of the shape of the U.S. Treasury yield curve discussed below (FRR), Louisiana Light Sweet crude oil, also discussed below (LLS), the ten-year Treasury Inflation-Protected Securities breakeven rate (BE-10), gold, and the volatility indices calculated by Cboe for the S&P 500 and NASDAQ 100 indices (VIX and VXN), respectively.

The FRR is the annualized rate at which we can lock in borrowing costs for eight years starting two years from now, divided by the ten-year rate itself. This measure effectively is the tangent of the yield curve and is independent of the ordinal level of interest rates. This is an important consideration as yields and therefore simple yield curve spreads remain compressed. A positively sloped yield curve has an FRR greater than 1.00 while an inverted yield curve has an FRR less than 1.00.

Louisiana Light Sweet (LLS) crude oil at the U.S. Gulf Coast tracks the global benchmark of Dated Brent very closely as they are of similar refining value. The advantage of using this price is it has not been subject to the large expansion of the so-called mid-continent discount in the U.S. and is less affected than Dated Brent both by refining economics in Northwest Europe and by transportation differentials in the Atlantic Basin.

Two measures of statistical relationship are presented below. The first is the r-squared of a linear regression over the sample period; this tells us what percentage of the variance in each stock index can be explained by the external market factor. R-squared levels move between 0.00 for complete randomness to 1.00 for complete determination. As an aside, we should not expect these r-squared levels to be very high as stock index total returns are affected far more by company-specific and intrinsic factors (alpha) and the general behavior of the stock market itself (beta). Moreover, in an homage to Burton Malkiel, equity returns tend to follow a random walk statistically; that is, the best predictor of tomorrow's price is today's price plus-or-minus a drift term. This "autoregressive" behavior will be seen later in the spread relationship between the NYSE FANG+ Index and S&P 500 and NASDAQ 100 indices.

**R-Squared Of Stock Index Returns Against Selected Markets  
September 2014 - June 2020**

	USD <sup>®</sup>	UST-2	UST-10	FRR	LLS	BE-10	Gold	VIX	VXN
FANG+	0.019	0.360	0.000	0.558	0.034	0.006	0.524	0.041	0.087
S&P 500	0.029	0.399	0.001	0.678	0.072	0.019	0.499	0.002	0.020
NASDAQ 100	0.042	0.302	0.004	0.557	0.027	0.001	0.584	0.034	0.073
S&P Tel.	0.111	0.084	0.083	0.335	0.001	0.008	0.591	0.000	0.001
S&P Info. Tech.	0.041	0.277	0.008	0.545	0.026	0.000	0.613	0.037	0.077
MSCI World	0.003	0.458	0.019	0.698	0.144	0.070	0.413	0.002	0.002
EAFE	0.014	0.499	0.100	0.633	0.278	0.208	0.205	0.055	0.018
EM	0.059	0.462	0.108	0.540	0.315	0.245	0.219	0.037	0.010

The second measure is the partial contribution, or degree of association between the market factor and the stock index' total return series. These can be both positive and negative.

**Partial Contribution Of Stock Index Returns Against Selected Markets  
September 2014 - June 2020**

	USDX	UST-2	UST-10	FRR	LLS	BE-10	Gold	VIX	VXN
FANG+	0.140	0.600	0.013	-0.747	0.185	0.084	0.724	0.203	0.297
S&P 500	0.174	0.632	0.036	-0.824	0.270	0.142	0.707	0.050	0.145
NASDAQ 100	0.206	0.302	-0.065	-0.747	0.168	0.022	0.764	0.186	0.272
S&P Tel.	0.333	0.291	-0.290	-0.579	0.023	-0.091	0.769	-0.017	0.025
S&P Info. Tech.	0.205	0.527	-0.092	-0.729	0.163	0.002	0.783	0.195	0.278
MSCI World	0.061	0.677	0.140	-0.835	0.380	0.266	0.643	-0.050	0.048
EAFE	-0.120	0.707	0.138	-0.796	0.528	0.456	0.453	-0.236	-0.136
EM	-0.244	0.680	0.330	-0.735	0.562	0.495	0.469	-0.193	-0.105

The NYSE FANG+ Index is less affected by the USDX than are either the S&P 500 or the NASDAQ 100 indices. The partial contribution of the USDX to both the MSCI EAFE and EM indices is negative; a stronger U.S. dollar has been associated with U.S. equity outperformance over the sample period.

While the partial contribution of two-year Treasury yields is similar for the NYSE FANG+ and S&P 500 indices, the NASDAQ 100 index is affected much less; interestingly, the strongest positive partial contributions for both two- and ten-year Treasury yields are against the MSCI EAFE and EM indices. Non-U.S. markets have responded well to the higher Treasury note yields associated with stronger economic growth. The most negative partial contributions for the FRR are for the S&P 500 and MSCI World indices, both of which have heavy exposure to the financial sector. TIPS breakeven rates of inflation have been a minor factor for the U.S. indices over this sample period but have had a strong positive partial contribution to the MSCI EAFE and EM indices. However, the opposite relationship obtains for gold.

The partial contribution of LLS to the NYSE FANG+ Index is similar to those for the NASDAQ 100 and S&P 500 Information Technology indices, but is significantly lower than that for the S&P 500 index. This is unsurprising given the broad market's inclusion of the energy and financial sectors. Regardless, the strongest contributions for LLS are against the MSCI EAFE and EM indices. As crude oil has been under pressure for most of the sample period, the lower exposure of the NYSE FANG+ Index to it has contributed to its outperformance against the non-U.S. indices.

Finally, the NYSE FANG+ Index has the strongest exposure of the U.S. indices examined to both the VIX and VXN. This is consistent with the index' higher standard deviation of returns and greater upside and downside variances. We should put aside the growing question of whether implied volatility is a function of stock index fluctuations or if volatility trading strategies increasingly are influencing the stock indices and simply accept the observed linkage between the NYSE FANG+ Index and the implied volatility measures.

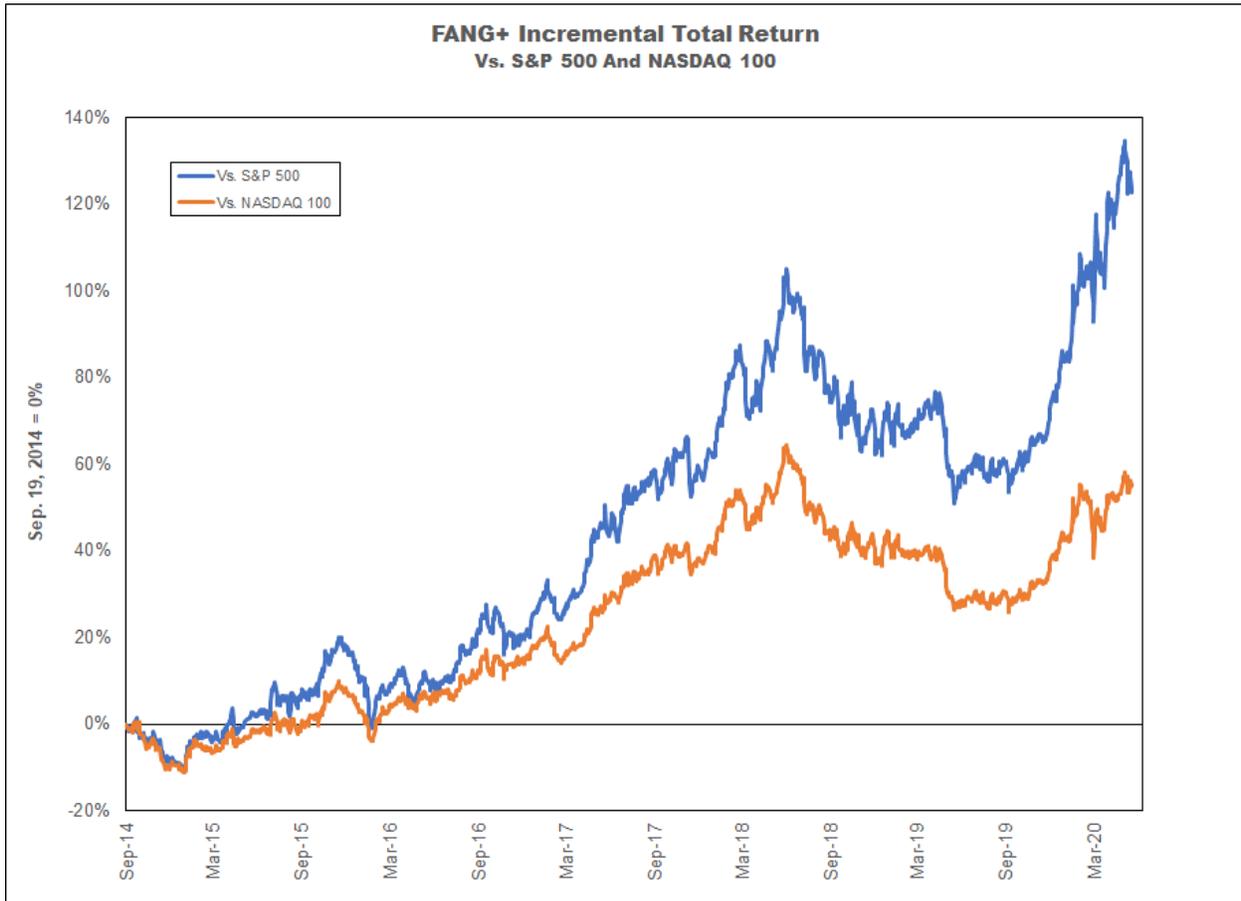
### Spread Trade Relationships

Whether we recognize it consciously at the time, all financial market trades are spreads. At its simplest, the purchase of a stock is a swap of cash's return for the stock's return. Spread trades can be classified into categories such as process spreads like the crack spread in petroleum market, joint product spreads such as ultra-low sulfur diesel fuel against RBOB gasoline, substitution spreads such as canola against soybeans, yield curve spreads, calendar spreads and related spreads such as equity matched-pair and index spreads.

Related spreads involve markets with general economic relationships not inclusive of substitution or joint product attributes. As such, they have no economic bounds or physical process constraints and no mean-reverting tendencies. Restated, a related index spread can move along in a long-term trending relationship so long as new information comes into the market supportive of the underlying trend. In deference to devotees of market efficiency and the random walk hypothesis, while the present price may be efficient given all available information, new information can change the underlying economic value of the asset and produce new prices.

As changes in information can move in one direction persistently and as the risk-acceptance of market participants can rise and fall in herd-like fashion, stock index spreads often exhibit the same autoregressive behavior observed for

each index involved. This can be illustrated by mapping the incremental total return of the NYSE FANG+ Index to both the S&P 500 and NASDAQ 100 indices. These incremental returns exhibit persistent trends.



Source: Bloomberg Financial

These trends can be traded simply and efficiently in the futures market by using NYSE FANG+ futures on ICE Futures U.S.<sup>®</sup> and, for purposes of illustration, E-mini S&P 500 and E-mini NASDAQ 100 futures on the CME Group<sup>®</sup>. A complete description of NYSE FANG+ Index futures can be found at <https://www.theice.com/products/66380320/NYSE-FANG-Index-Future>. The sample period for the discussion below begins with the launch of these futures on November 8, 2017 and extends through June 5, 2020. As the index futures have the same quarterly expiration cycle, a continuous front-month contract will be used.

First, let's establish the hedge ratios between the index futures. This can be done by converting the respective futures prices into dollar equivalents by using the contract multipliers of \$20 per index point for the NASDAQ 100 E-mini<sup>®</sup> and \$50 per index point for both the NYSE FANG+<sup>™</sup> and S&P 500 E-mini futures. The products will be referred to as NYFANGD, SPXD and NDXD.

The following regression synopses were obtained:

$$\text{NYFANGD} = 1.003 * \text{NDXD} - 13508; r^2 = 0.774, \text{D-W} = 0.022$$

$$\text{NYFANGD} = 1.175 * \text{SPXD} - 29848; r^2 = 0.372, \text{D-W} = 0.013$$

The 1.003 beta for the NDXD indicates we can use a simple 1:1 hedge ratio, while the 1.175 beta for the SPXD indicates we should trade 7 S&P 500 E-mini futures against 6 NYSE FANG+ futures. The very low Durbin-Watson (D-W) statistics are consistent with the autoregressive nature of stock indices and their strong suitability for long-term

spread trading. If we included other independent variables, we could build a superior model and see the D-W move toward the unbiased level of 2.00, but this would be irrelevant to the objectives of investing and trading.

Like all stock index futures, NYSE FANG+ futures offer superior capital use efficiencies. While initial and maintenance margin levels rise and fall with market volatility, exposure to the index can be acquired with a single trade for 22 hours per day at a mid-June 2020 a minimum initial margin level of \$20,325.70 and a maintenance margin level of \$18,477.90. This compares to an index contract value in the neighborhood of \$200,000. Moreover, the gains and losses on these futures trades are eligible for IRS Section 1256 tax treatment (60 percent long-term / 40 percent short-term capital gains). As always, consult with a tax professional for full understanding of tax treatment, including hedge accounting and the constructive sale rule.

### **Conclusion**

No single investment exposure or trading strategy works permanently, as all too many have discovered the hard way. However, traders and investors must focus on opportunities in the present and not on philosophies about future performance. At present, the NYSE FANG+ Index offers superior performance characteristics without the assumption of outlandish risk, different responses to external market factors and long-term trending spread opportunities against other broad-based stock indices. What more can we ask?