

HEDGEYE



# HEDGEYE'S CURRENT MARKET OUTLOOK

Phase 3  $\neq$  Phase 2

Updated: June 30, 2020



## MACRO THEMES

Recession Stagflation

Earnings: Deep #Pod4

USD, Commodities, EM

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## [1] Recession Stagflation

We remain of the view that the US economy is transitioning from depression to recession, not “recovery”. In the presentation we’ll detail why Quad 3 is the most likely outcome for most of 3Q20E and why a flattening slope of improvement off the APR lows in economic activity represents a developing source of market risk for perceived recovery trades.

## [2] Earnings: Deep #Pod4

We took offense to the consensus view that corporate profits had bottomed at the beginning of the year and continue to take offense to such speculation heading into 2H20E. In the presentation, we’ll detail why we believe an epically negative earnings revision cycle is likely to commence in Q3.

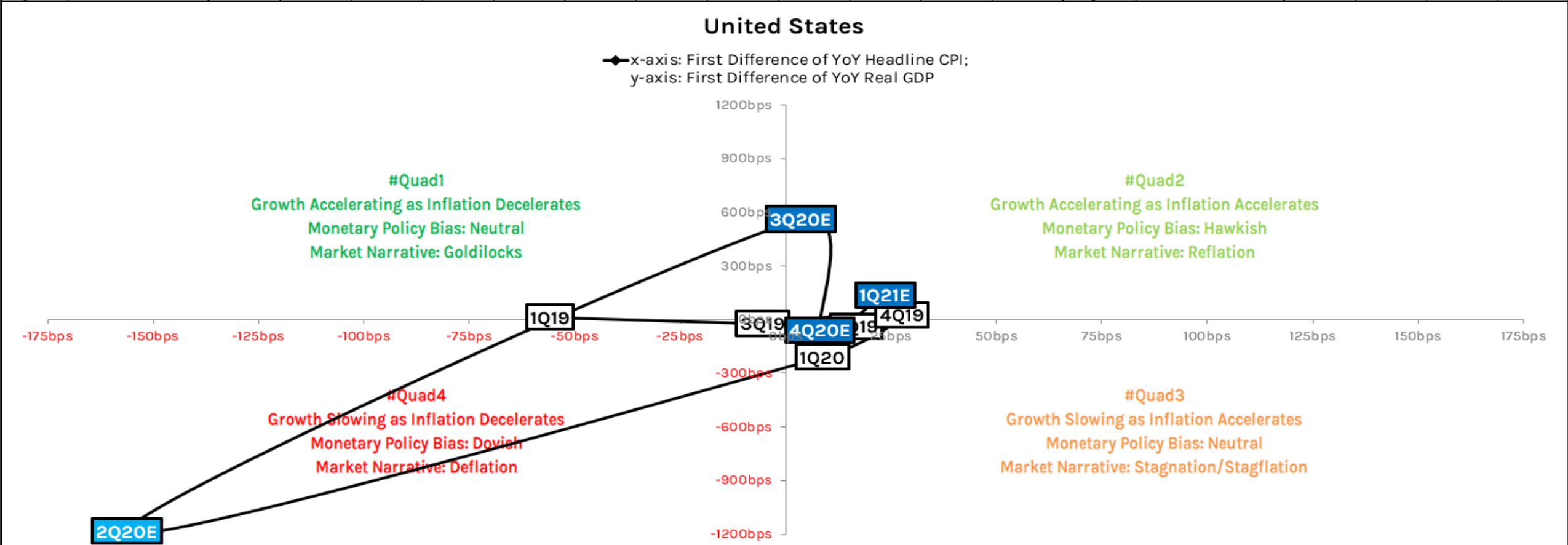
## [3] USD, Commodities, EM

The shallower the Quad 3, the more it looks like Quad 2 in asset performance terms – i.e. *The Machine* seeks out pricing power and organic growth potential. Cyclical assets like Energy outperform in Narrow instances of Quad 3. The more pronounced the Quad 3, the more it looks like Quad 4 in asset performance terms – i.e. *The Machine* seeks out safe dividend yields. Cyclical assets like Energy get smoked in Deep Quad 3. If that sounds confusing, it’s because it is. In the presentation we’ll do our best to help you position for what market history has proven to be the most difficult economic regime to risk manage: stagflation.

# What Are The Quads?

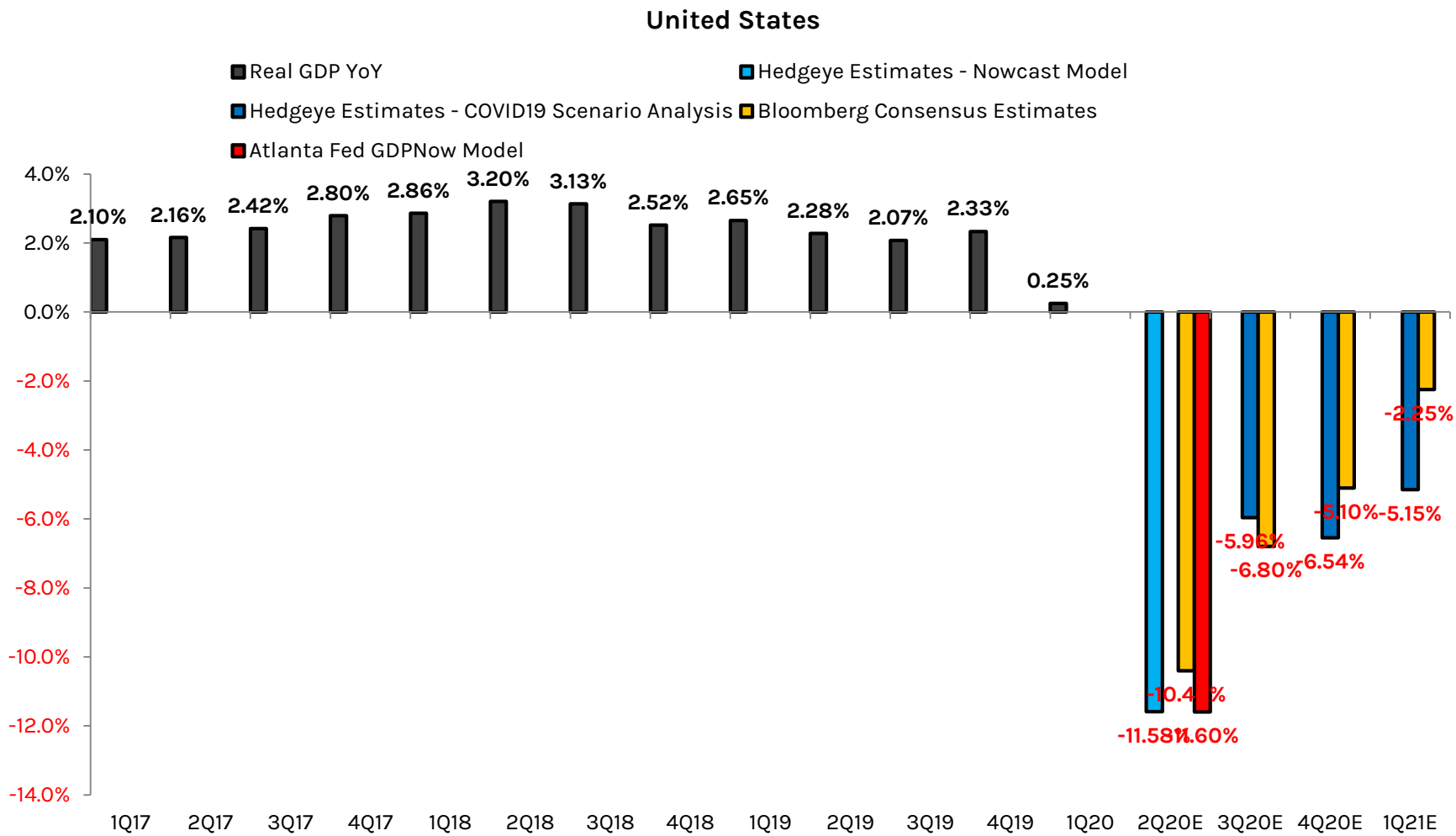
Our GIP Model is a quantitatively oriented, regime-based framework that helps investors proactively prepare for volatility phase transitions within and across asset classes – i.e. GROWTH, INFLATION, and POLICY.

| United States                | 2Q17  | 3Q17  | 4Q17  | 1Q18  | 2Q18  | 3Q18  | 4Q18  | 1Q19  | 2Q19  | 3Q19  | 4Q19  | 1Q20   | ← Actuals   Estimates →      | 2Q20E   | 3Q20E  | 4Q20E  | 1Q21E  |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|------------------------------|---------|--------|--------|--------|
| Real GDP QoQ SAAR            | 2.20% | 3.20% | 3.50% | 2.50% | 3.50% | 2.90% | 1.10% | 3.10% | 2.00% | 2.10% | 2.10% | -5.00% | Real GDP QoQ SAAR            | -45.46% | 27.67% | -0.39% | 0.73%  |
| Real GDP YoY                 | 2.16% | 2.42% | 2.80% | 2.86% | 3.20% | 3.13% | 2.52% | 2.65% | 2.28% | 2.07% | 2.33% | 0.25%  | Real GDP YoY                 | -11.58% | -5.96% | -6.54% | -5.15% |
| 2yr Comparative Base Effects | 2.35% | 2.00% | 1.97% | 1.86% | 1.75% | 1.99% | 2.41% | 2.48% | 2.68% | 2.77% | 2.66% | 2.76%  | 2yr Comparative Base Effects | 2.74%   | 2.60%  | 2.43%  | 1.45%  |
| Headline CPI YoY             | 1.90% | 1.97% | 2.12% | 2.21% | 2.71% | 2.64% | 2.20% | 1.64% | 1.81% | 1.76% | 2.03% | 2.12%  | Headline CPI YoY             | 0.56%   | 0.59%  | 0.67%  | 0.91%  |
| 2yr Comparative Base Effects | 0.50% | 0.61% | 1.13% | 1.81% | 1.48% | 1.54% | 1.96% | 2.38% | 2.31% | 2.30% | 2.16% | 1.93%  | 2yr Comparative Base Effects | 2.26%   | 2.20%  | 2.12%  | 1.88%  |



Data Source: Bloomberg. Light Blue box= Hedgeye Predictive Tracking Algorithm nowcast. Dark Blue boxes = Hedgeye COVID19 Scenario Analysis estimates.

# US Real GDP YoY Projections

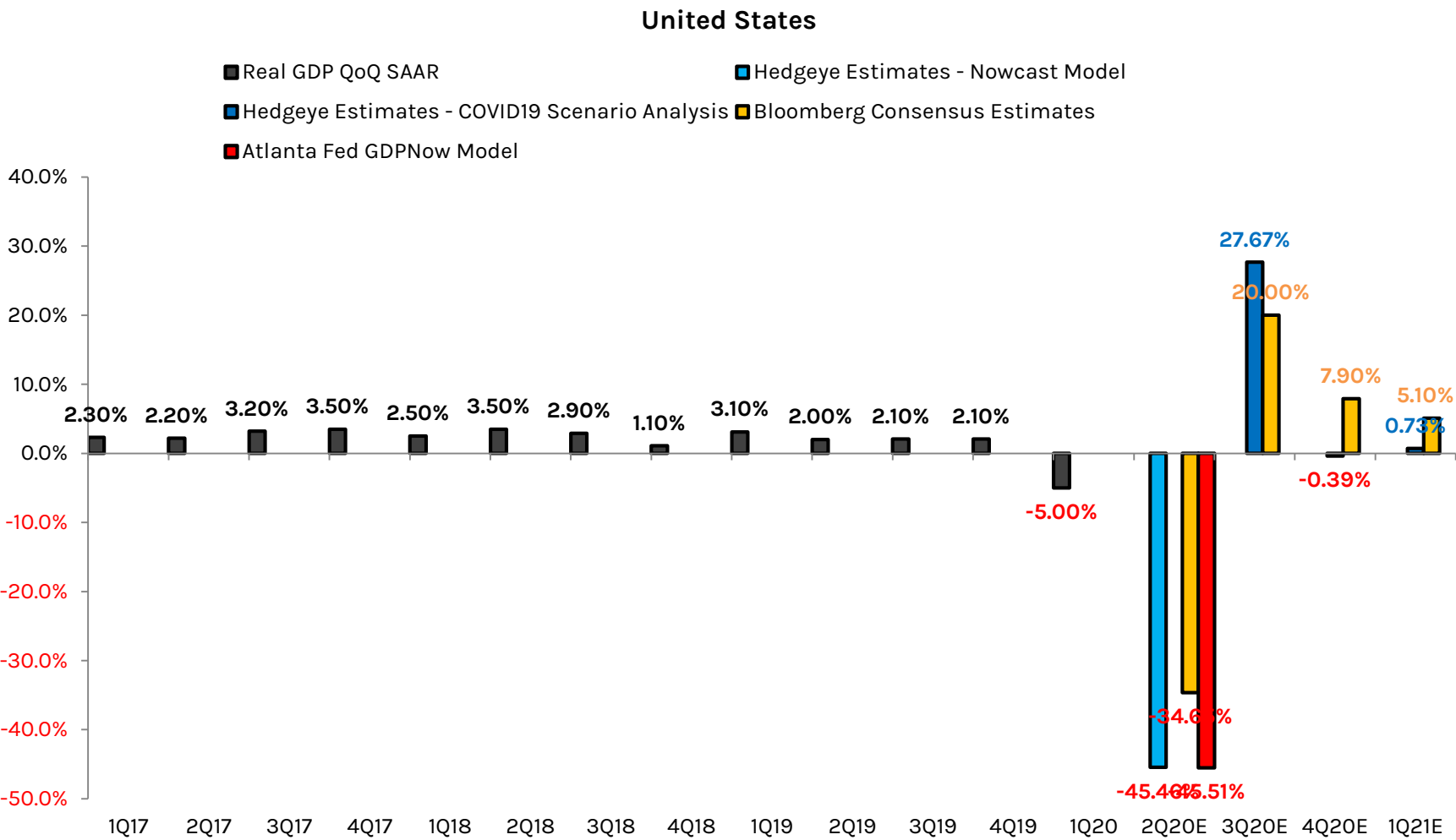


We use two distinct models to forecast the YoY growth rate of Real GDP and the combination of the two allows us to develop both a highly accurate real-time assessment of near-term economic momentum, as well as a high-probability scenario for where growth is likely to trend over the NTM.

Intra-quarter, we employ a stochastic nowcasting framework that anchors on nonlinear interpolation to relay rate of change signals from the individual features of the dynamic factor model to the base rate. In out-quarters where high-frequency data has yet to be reported, we employ a Bayesian Inference process that adjusts each of the preceding forecasted base rates inversely and proportionally to changes in the base effects.

All told, our US GDP nowcast model has an average absolute forecast error of 28bps and an 88% success rate in terms of accurately projecting the rate of change of GROWTH.

# US Real GDP QoQ SAAR Projections



One differentiating factor of our forecasting process is that we aim to solve for where the economy is trending on a **Full Investing Cycle** basis, rather than trying to identify super short-term economic momentum.

Our rigorous study of financial market history suggests the latter to be little more than noise in the context of making accurate intermediate-to-long-term investment decisions.

As such, we are comfortable departing from the [perceived] “best” practices of economist consensus by interpolating our QoQ SAAR forecasts from our forecasted YoY growth rates. Macroeconomic Theory ≠ Macro Risk Management.



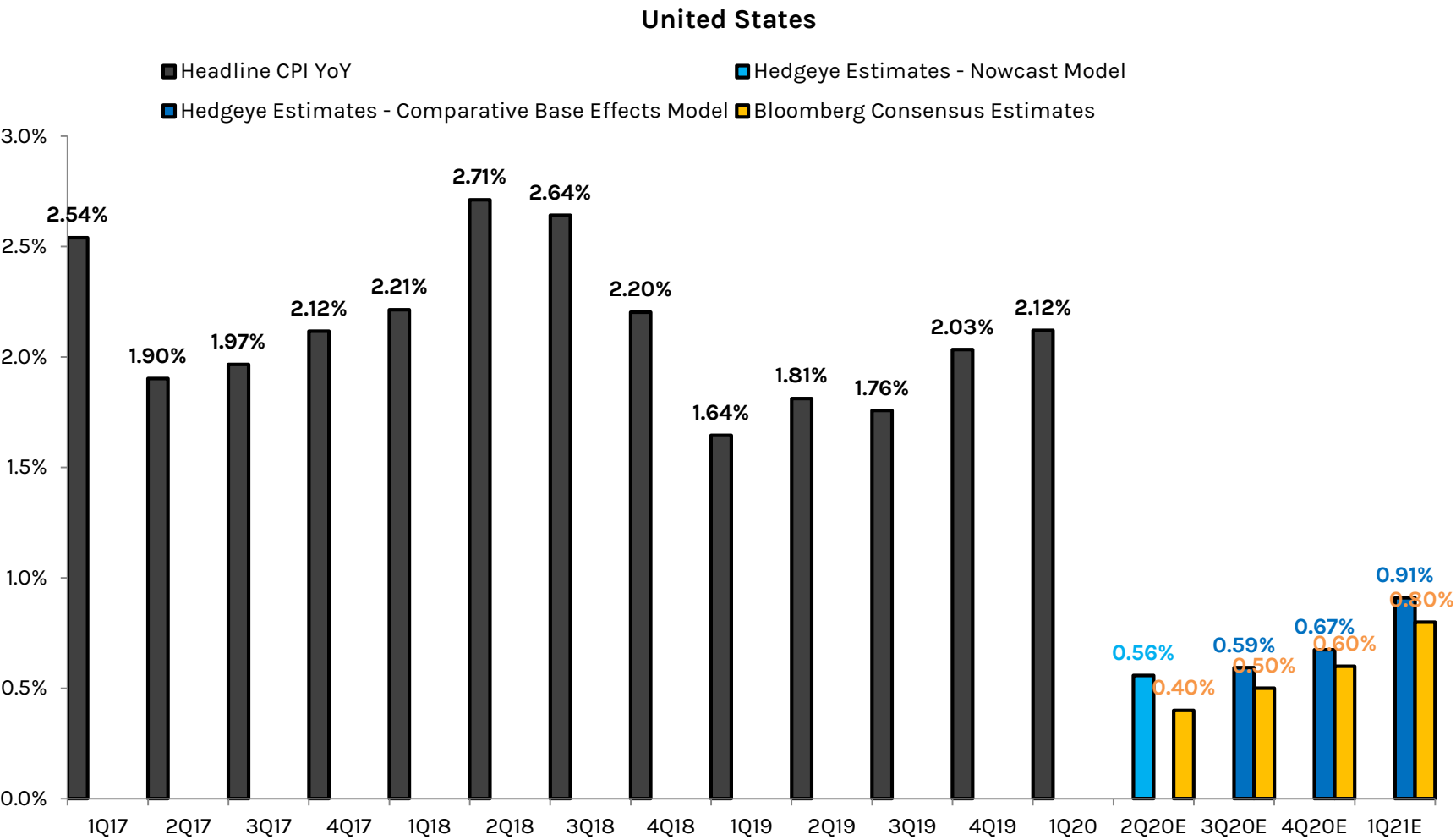
# US Real GDP Nowcast Model

Each of the following 30 features backtests as statistically significant with respect to predicting the rate of change of Real GDP growth and each feature's contribution to the overall signal is dynamically re-trained each quarter according to the relative strength of its first difference regression with the dependent variable.

| HEDGEYE US NOWCAST MODEL SUMMARY              | Jul-18 | Aug-18 | Sep-18 | Oct-18 | Nov-18 | Dec-18 | Jan-19 | Feb-19 | Mar-19 | Apr-19 | May-19 | Jun-19 | Jul-19 | Aug-19 | Sep-19 | Oct-19 | Nov-19 | Dec-19 | Jan-20 | Feb-20 | Mar-20 | Apr-20 | May-20  | Jun-20  | 1Q20   | 2Q20    | Δ       |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|---------|--------|---------|---------|
| Real PCE YoY (1)                              | 3.51   | 3.75   | 3.08   | 3.23   | 3.03   | 1.69   | 2.42   | 2.33   | 2.76   | 2.70   | 2.61   | 2.60   | 2.56   | 2.46   | 2.67   | 2.34   | 2.32   | 3.32   | 2.94   | 3.25   | -4.38  | -17.32 | -       | -       | 0.60   | -17.32  | -17.92  |
| Real Disposable Personal Income YoY (27)      | 4.09   | 4.30   | 3.99   | 3.84   | 3.67   | 4.19   | 3.24   | 3.43   | 3.28   | 3.12   | 3.01   | 2.94   | 2.54   | 2.64   | 3.00   | 2.71   | 3.00   | 1.96   | 2.36   | 2.37   | 0.26   | 13.76  | -       | -       | 1.67   | 13.76   | 12.09   |
| Personal Savings Rate % of DPI (8)            | 7.5    | 7.5    | 7.5    | 7.3    | 7.2    | 8.8    | 8.3    | 8.8    | 8.4    | 8.0    | 7.8    | 7.8    | 7.4    | 7.7    | 7.8    | 7.7    | 7.9    | 7.7    | 7.9    | 8.2    | 12.7   | 33.0   | -       | -       | 9.6    | 33.0    | 23.4    |
| Headline Retail Sales YoY (9)                 | 6.06   | 5.72   | 3.36   | 4.40   | 3.63   | 0.92   | 2.52   | 1.99   | 3.61   | 3.86   | 2.91   | 3.61   | 3.64   | 4.31   | 3.95   | 3.31   | 3.25   | 5.61   | 4.87   | 4.48   | -5.59  | -19.90 | -6.08   | -       | 1.25   | -12.99  | -14.24  |
| Retail Sales Control Group YoY (12)           | 5.11   | 4.60   | 3.90   | 4.71   | 4.54   | 0.46   | 3.68   | 2.81   | 3.88   | 3.86   | 3.40   | 4.96   | 4.87   | 5.05   | 4.41   | 4.10   | 2.51   | 6.20   | 3.70   | 4.01   | 6.32   | -7.45  | 2.13    | -       | 4.68   | -2.66   | -7.34   |
| Auto Sales YoY (26)                           | -0.06  | 3.56   | -5.79  | -2.67  | 0.00   | -1.46  | -2.75  | -2.36  | 0.57   | -3.93  | 2.91   | -0.46  | 0.84   | 2.23   | -1.21  | -5.43  | -1.78  | -4.57  | 1.45   | 1.63   | -35.03 | -47.68 | -29.42  | -       | -10.65 | -38.55  | -27.90  |
| MBA Mortgage Purchase Index YoY (21)          | 3.01   | -0.41  | 1.51   | -1.60  | -0.28  | -1.07  | 5.99   | 0.20   | 3.40   | 5.56   | 5.11   | 8.16   | 6.21   | 5.97   | 10.50  | 9.34   | 11.00  | 9.05   | 9.09   | 10.61  | -2.10  | -29.85 | -1.13   | 17.16   | 5.87   | -4.60   | -10.47  |
| Total Employees On Nonfarm Payrolls YoY (7)   | 1.57   | 1.60   | 1.65   | 1.60   | 1.53   | 1.57   | 1.67   | 1.39   | 1.37   | 1.42   | 1.28   | 1.26   | 1.29   | 1.27   | 1.35   | 1.34   | 1.42   | 1.42   | 1.38   | 1.55   | 0.54   | -13.35 | -11.73  | -       | 1.16   | -12.54  | -13.70  |
| Aggregate Hours Worked YoY (4)                | 1.86   | 1.90   | 1.94   | 1.89   | 1.24   | 1.57   | 1.96   | 1.10   | 1.37   | 1.12   | 0.99   | 0.67   | 0.71   | 0.97   | 1.06   | 1.05   | 1.13   | 0.84   | 0.80   | 1.55   | -0.63  | -13.85 | -10.96  | -       | 0.57   | -12.41  | -12.98  |
| Aggregate Labor Income YoY (5)                | 4.76   | 5.14   | 5.02   | 5.28   | 4.63   | 5.00   | 5.28   | 4.65   | 4.84   | 4.50   | 4.32   | 4.10   | 4.20   | 4.46   | 4.20   | 4.30   | 4.45   | 3.87   | 3.90   | 4.59   | 2.70   | -6.94  | -4.96   | -       | 3.73   | -5.95   | -9.68   |
| Monthly Continuing Claims YoY (2)             | -10.94 | -11.88 | -13.95 | -13.80 | -12.94 | -10.13 | -10.04 | -7.04  | -5.81  | -7.73  | -3.47  | -2.18  | -3.30  | -1.58  | -0.04  | 2.19   | 0.85   | 1.95   | 0.53   | -1.10  | 102.89 | 917.95 | 1206.78 | 1111.14 | 34.10  | 1078.62 | 1044.52 |
| Bloomberg Consumer Comfort Index (28)         | 58.4   | 58.8   | 60.0   | 60.2   | 60.9   | 59.5   | 57.9   | 59.7   | 60.7   | 60.3   | 60.2   | 62.3   | 64.2   | 62.0   | 62.6   | 62.7   | 59.2   | 62.2   | 66.1   | 65.3   | 60.9   | 43.8   | 36.0    | 39.5    | 64.1   | 39.8    | -24.4   |
| Industrial Production YoY (3)                 | 3.93   | 5.26   | 5.41   | 4.06   | 4.06   | 3.77   | 3.63   | 2.74   | 2.26   | 0.71   | 1.73   | 1.02   | 0.40   | 0.30   | -0.18  | -0.81  | -0.42  | -0.81  | -0.82  | -0.18  | -4.86  | -16.25 | -15.27  | -       | -1.95  | -15.76  | -13.80  |
| Capacity Utilization (6)                      | 78.8   | 79.3   | 79.3   | 79.3   | 79.6   | 79.5   | 79.0   | 78.5   | 78.4   | 77.8   | 77.8   | 77.7   | 77.4   | 77.8   | 77.4   | 77.0   | 77.6   | 77.2   | 76.8   | 76.8   | 73.2   | 64.0   | 64.8    | -       | 75.6   | 64.4    | -11.2   |
| Durable Goods New Orders YoY (14)             | 9.09   | 11.58  | 7.11   | 6.01   | 3.77   | 3.59   | 8.07   | 0.04   | 2.26   | -1.66  | -3.96  | -4.41  | 0.38   | -3.27  | -5.73  | -1.61  | -3.95  | -3.27  | -3.62  | 1.62   | -18.64 | -29.78 | -       | -       | -6.88  | -29.78  | -22.90  |
| Core Capital Goods New Orders YoY (18)        | 11.23  | 6.70   | 3.11   | 4.15   | 1.62   | 2.44   | 5.56   | 4.74   | 6.40   | 2.25   | 0.84   | 0.49   | -3.29  | 0.10   | -0.12  | -0.74  | 3.43   | 1.67   | 0.56   | 0.97   | -2.63  | -6.79  | -       | -       | -0.37  | -6.79   | -6.42   |
| Factory Orders YoY (23)                       | 8.88   | 9.87   | 7.55   | 6.44   | 3.04   | 2.26   | 4.41   | 1.22   | 2.45   | 0.84   | -1.29  | -2.25  | 0.48   | -1.75  | -3.28  | -1.31  | -1.16  | 0.29   | -0.55  | 0.53   | -12.43 | -22.34 | -       | -       | -4.15  | -22.34  | -18.18  |
| Manufacturing & Trade Inventories YoY (15)    | 4.14   | 4.07   | 4.34   | 5.03   | 4.43   | 4.91   | 5.20   | 5.09   | 5.05   | 5.29   | 5.19   | 5.00   | 4.70   | 3.93   | 3.41   | 2.86   | 2.66   | 1.87   | 0.77   | -0.16  | -0.48  | -2.18  | -       | -       | 0.04   | -2.18   | -2.22   |
| Nonresidential Construction Spending YoY (19) | 6.04   | 6.52   | 7.70   | 4.42   | 1.32   | 1.16   | 3.92   | 2.36   | 4.85   | 4.90   | 2.25   | 1.86   | 0.63   | 1.19   | 0.36   | 2.97   | 7.57   | 6.24   | 5.63   | 5.12   | 3.76   | 0.86   | -       | -       | 4.84   | 0.86    | -3.98   |
| Residential Construction Spending YoY (24)    | 3.75   | 1.20   | -0.15  | -2.55  | -5.13  | -7.12  | -7.86  | -11.14 | -8.91  | -9.28  | -9.47  | -8.46  | -7.00  | -2.84  | -1.36  | 4.04   | 2.81   | 6.93   | 11.12  | 11.22  | 11.29  | 6.29   | -       | -       | 11.21  | 6.29    | -4.93   |
| ISM Manufacturing PMI (22)                    | 58.2   | 60.8   | 59.3   | 58.5   | 58.8   | 55.0   | 55.5   | 54.1   | 54.6   | 53.4   | 52.3   | 51.6   | 51.3   | 48.8   | 48.2   | 48.5   | 48.1   | 47.8   | 50.9   | 50.1   | 49.1   | 41.5   | 43.1    | -       | 50.0   | 42.3    | -7.7    |
| ISM Non-Manufacturing PMI (20)                | 57.5   | 58.9   | 61.2   | 60.3   | 60.2   | 58.0   | 56.0   | 58.5   | 56.3   | 55.7   | 56.3   | 55.4   | 54.8   | 56.0   | 53.5   | 54.4   | 53.9   | 54.9   | 55.5   | 57.3   | 52.5   | 41.8   | 45.4    | -       | 55.1   | 43.6    | -11.5   |
| NFIB Small Business Optimism Index (30)       | 107.9  | 108.8  | 107.9  | 107.4  | 104.8  | 104.4  | 101.2  | 101.7  | 101.8  | 103.5  | 105.0  | 103.3  | 104.7  | 103.1  | 101.8  | 102.4  | 104.7  | 102.7  | 104.3  | 104.5  | 96.4   | 90.9   | 94.4    | -       | 101.7  | 92.7    | -9.1    |
| Exports YoY (17)                              | 7.22   | 6.37   | 6.28   | 5.94   | 2.55   | -0.30  | 1.50   | 0.41   | -0.06  | -1.32  | -1.01  | -1.55  | -0.07  | -0.15  | -1.87  | -1.83  | -0.42  | 1.22   | 0.10   | 0.45   | -10.78 | -27.72 | -       | -       | -3.41  | -27.72  | -24.31  |
| Imports YoY (25)                              | 9.15   | 8.96   | 9.47   | 8.88   | 3.71   | 3.38   | 1.92   | -0.21  | 2.30   | 0.67   | 3.09   | 1.58   | 0.12   | 0.03   | -2.87  | -4.98  | -3.63  | -3.08  | -2.61  | -4.53  | -11.27 | -22.36 | -       | -       | -6.14  | -22.36  | -16.22  |
| Rail Traffic YoY (11)                         | 5.23   | 3.74   | 4.34   | 1.96   | 3.83   | 1.76   | 3.89   | -3.32  | -4.72  | -2.42  | -5.54  | -4.59  | -5.55  | -5.02  | -6.39  | -7.90  | -7.70  | -9.40  | -6.22  | -6.74  | -10.09 | -20.91 | -20.61  | -15.93  | -7.68  | -19.15  | -11.47  |
| Headline CPI YoY (13)                         | 2.95   | 2.70   | 2.28   | 2.52   | 2.18   | 1.91   | 1.55   | 1.52   | 1.86   | 2.00   | 1.79   | 1.65   | 1.81   | 1.75   | 1.71   | 1.76   | 2.05   | 2.29   | 2.49   | 2.33   | 1.54   | 0.33   | 0.12    | -       | 2.12   | 0.22    | -1.90   |
| PCE Deflator YoY (16)                         | 2.45   | 2.26   | 2.02   | 2.04   | 1.91   | 1.78   | 1.41   | 1.31   | 1.40   | 1.52   | 1.38   | 1.36   | 1.44   | 1.43   | 1.33   | 1.32   | 1.34   | 1.56   | 1.78   | 1.77   | 1.33   | 0.54   | -       | -       | 1.63   | 0.54    | -1.09   |
| Core PCE Deflator YoY (29)                    | 2.11   | 2.00   | 2.00   | 1.86   | 1.96   | 1.97   | 1.77   | 1.62   | 1.48   | 1.57   | 1.48   | 1.61   | 1.65   | 1.76   | 1.66   | 1.65   | 1.51   | 1.57   | 1.69   | 1.80   | 1.69   | 1.04   | -       | -       | 1.72   | 1.04    | -0.68   |
| M2 Money Supply YoY (10)                      | 3.95   | 3.96   | 3.91   | 3.75   | 3.51   | 3.94   | 4.34   | 4.15   | 3.81   | 4.07   | 4.27   | 4.54   | 5.00   | 5.06   | 5.51   | 6.26   | 6.89   | 6.49   | 6.71   | 7.26   | 10.70  | 17.75  | 23.04   | 23.39   | 8.22   | 21.39   | 13.17   |

Data Source: Bloomberg. Intellectual Property of Hedgeye Risk Management. Nowcast feature rank shown in parenthesis.

# US Headline CPI YoY Projections



We use two distinct models to forecast the YoY growth rate of Headline CPI and the combination of the two allows us to develop both a highly accurate real-time assessment of near-term inflation momentum, as well as a high-probability scenario for where inflation is likely to trend over the NTM.

Intra-quarter, we employ a stochastic nowcasting framework that anchors on nonlinear interpolation to relay rate of change signals from the individual features of the dynamic factor model to the base rate. In out-quarters where high-frequency data has yet to be reported, we employ a Bayesian Inference process that adjusts each of the preceding forecasted base rates inversely and proportionally to changes in the base effects.

All told, our US CPI nowcast model has an average absolute forecast error of 18bps and an 85% success rate in terms of accurately projecting the rate of change of INFLATION.



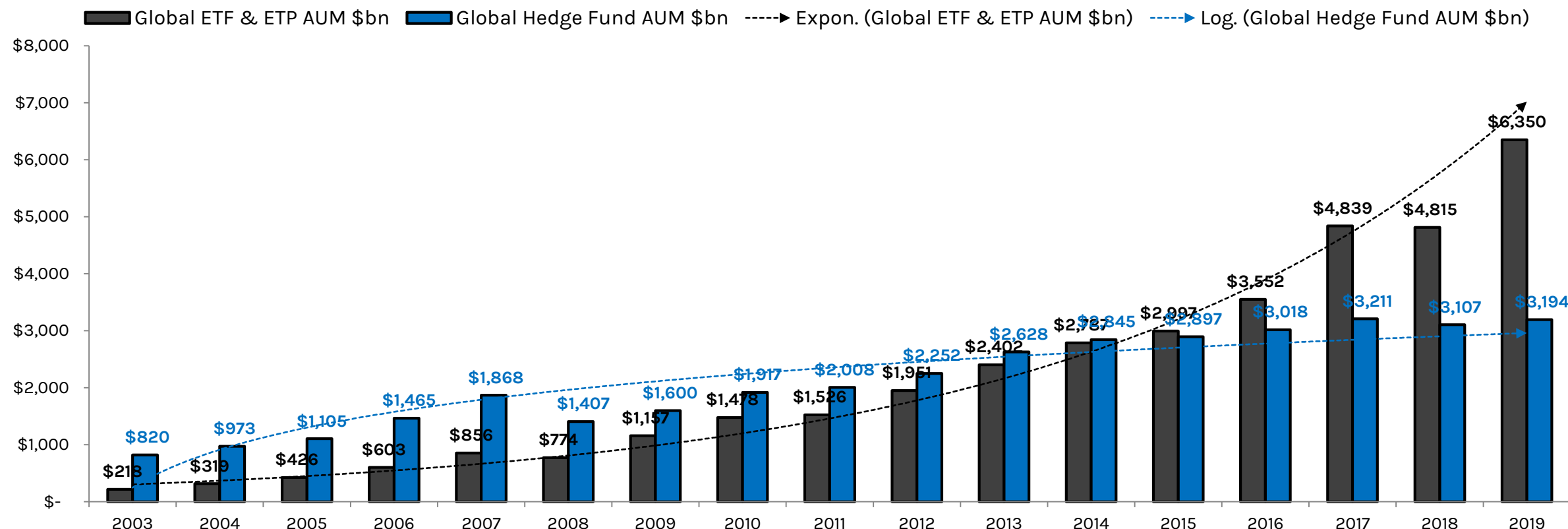
# OUR MACRO PROCESS



# The Investment Landscape Has Evolved Tremendously

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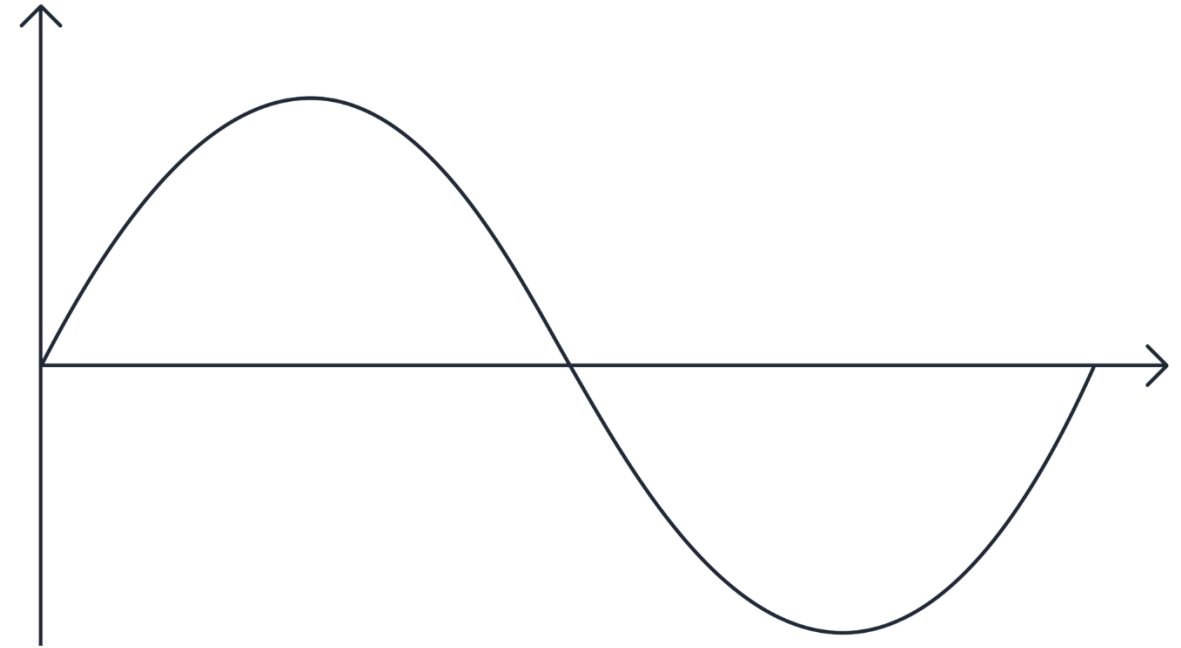
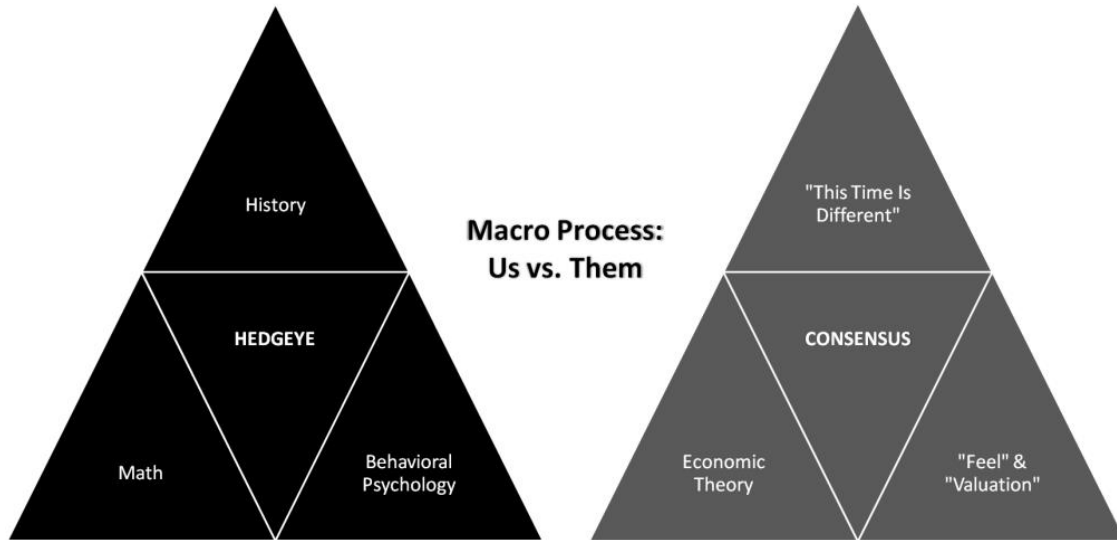
Stock-picking has given way to factor-picking and it's our job as investors to embrace this sea change, rather than fight it.



## Skate To Where The Puck Is Going Within Asset Management

Assets invested in ETFs and ETPs listed surpassed \$6 trillion globally as of YE 2019, topping global hedge fund assets by over \$3 trillion. Moreover, BlackRock anticipates ETF/ETP AUM to double to \$12 trillion over the next 5 years. Regardless of whether or not you agree with this projection, you have to agree that **the proliferation of factor-based index investing and the concentration of hedge fund AUM at market-neutral platforms has made financial markets more sensitive to Macro risks than ever before.** For example, JPM estimates systematic trading accounts for over 90% of US equity trading volume. Are your investment processes equipped to compete for alpha in this new regime?

# ... So We Evolved Alongside It



## WE ARE DIFFERENTIATED FROM THE HERD

**Macroeconomic Research** and **Global Macro Risk Management** are two very different fields. We specialize in the latter, incorporating key lessons from behavioral finance such as Prospect Theory and Bayesian Inference into our analysis. **We don't "feel" anything with regards to the markets or the economy; if we can't contextualize it with math, we don't have a view on it.**

## ...BECAUSE WE FOCUS ON THE FACTS

**Rate of change** accelerations and decelerations are facts, not opinions, and our process is focused on contextualizing these facts, rather opining on the validity of **absolute levels** of growth, inflation, and/or policy. **This focus helps us consistently spot inflections in the performance of key factor exposures, across asset classes, 3-6 months ahead of investor consensus.**

# What Tends To Outperform/Underperform In Each Quad?

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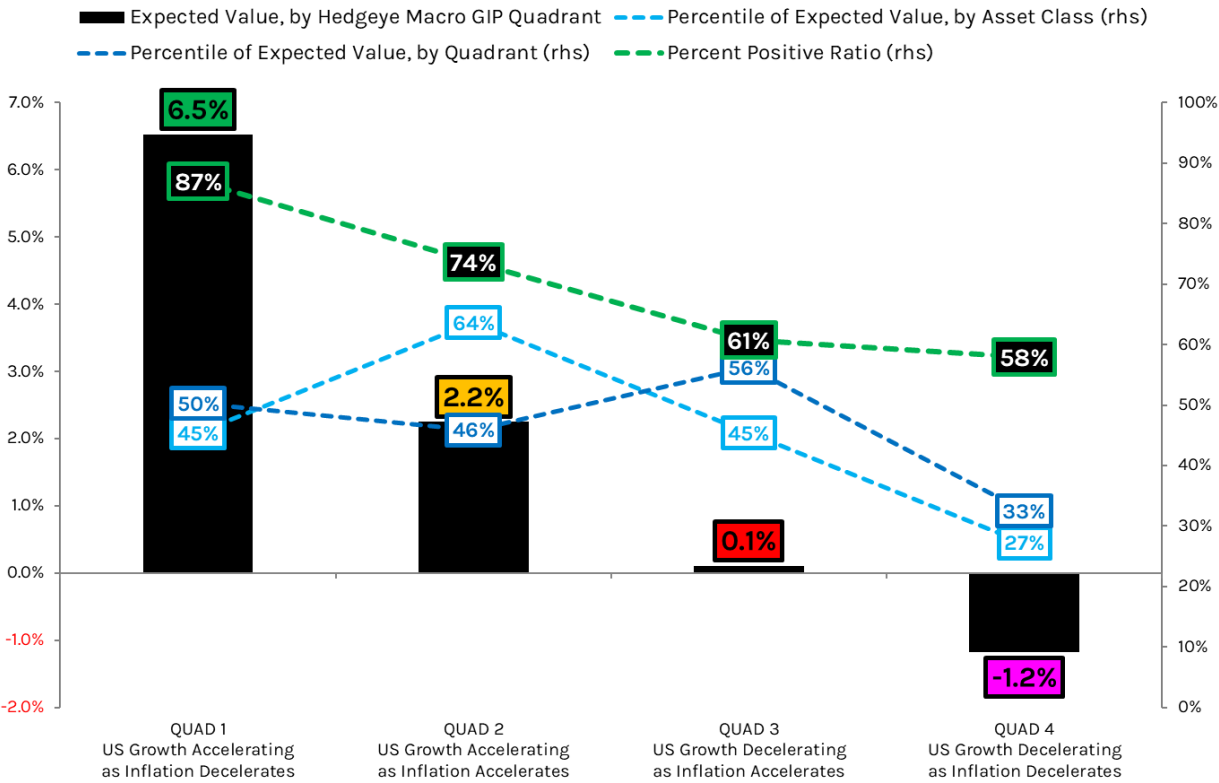
|  | QUAD 1       |              |              | QUAD 2       |              |              | QUAD 3       |              |              | QUAD 4       |              |              |
|--|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
|  | Straight     | Narrow       | Deep         | Straight     | Narrow       | Deep         | Straight     | Narrow       | Deep         | Straight     | Narrow       | Deep         |
| S & P 500 INDEX - Expected Value (SPY)       | 6.5%         | 4.6%         | 5.0%         | 2.2%         | 0.7%         | -0.1%        | 0.1%         | 4.0%         | -5.3%        | -1.2%        | 4.7%         | -8.0%        |
| Consumer Cyclical (XLY)                      | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Outperform   |
| Consumer Non-Cyclical (XLP)                  | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| Energy (XLE)                                 | Underperform | Underperform | Underperform | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Outperform   |
| Financials (XLF)                             | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Underperform |
| Health Care (XLV)                            | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   |
| Industrials (XLI)                            | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   |
| Information Technology (XLK)                 | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Materials (XLB)                              | Outperform   | Underperform | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   |
| REITS (XLRE)                                 | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Underperform |
| Communication Services (XLC)                 | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   |
| Utilities (XLU)                              | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   |
| Growth (IWF)                                 | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Value (IWD)                                  | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| Cyclicals (IWN)                              | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Defensives (DEF)                             | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| High Beta (SPHB)                             | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Low Beta (SPLV)                              | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| Momentum (MTUM)                              | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform |
| Quality (QUAL)                               | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   |
| Dividend Yield (SDY)                         | Outperform   | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| Size (DIA)                                   | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   |
| Secular Growth (QQQ)                         | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Mid-Caps (MDY)                               | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   |
| Small-Caps (IWM)                             | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform | Outperform   | Outperform   | Outperform   |
| BARCLAYS AGG - Expected Value (AGG)          | 1.2%         | 1.9%         | 1.6%         | 0.7%         | 0.7%         | 1.7%         | 1.0%         | -0.1%        | 1.6%         | 2.2%         | 1.6%         | 3.1%         |
| Leveraged Loans (BKLN)                       | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |
| BDCs (BIZD)                                  | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform | Outperform   | Underperform |
| Preferreds (PFF)                             | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform |
| IG Credit (LQD)                              | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform |
| HY Credit (HYG)                              | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform |
| Convertibles (CWB)                           | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform |
| EM Hard Currency (EMB)                       | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| EM Local Currency (EMLC)                     | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |
| 1-3yr Treasuries (SHY)                       | Underperform | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |
| 5-10yr Treasuries (IEF)                      | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   |
| 10-20yr Treasuries (TLT)                     | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| 25+ Year Treasuries (EDV)                    | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Outperform   |
| 0-5yr TIPS (STIP)                            | Underperform | Underperform | Underperform | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| 5-10yr TIPS (TIP)                            | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform |
| MBS (MBS)                                    | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform |
| Munis (MUB)                                  | Outperform   | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |
| Taxable Munis (BAB)                          | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform |
| CRB INDEX - Expected Value (DBC)             | 0.7%         | 0.8%         | 2.4%         | 3.3%         | 1.3%         | 4.8%         | 0.0%         | 4.6%         | -7.1%        | -3.9%        | 2.8%         | -12.1%       |
| CRB Raw Industrials Index (DBB)              | Outperform   | Underperform | Outperform   | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   |
| CRB Foodstuffs Index (DBA)                   | Underperform | Outperform   | Underperform | Underperform | Underperform | Outperform   | Underperform | Underperform | Outperform   | Outperform   | Underperform | Outperform   |
| WTI Crude Oil (USO)                          | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Underperform | Underperform | Underperform |
| US DOLLAR INDEX (DXY) - Expected Value (UUP) | -0.6%        | -2.1%        | 0.7%         | -0.5%        | -2.7%        | 0.9%         | 0.0%         | -0.3%        | 1.5%         | 1.6%         | 2.7%         | 0.3%         |
| Gold (GLD)                                   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Outperform   | Underperform | Outperform   | Underperform | Outperform   |
| EM FX (CEW)                                  | Outperform   | Outperform   | Underperform | Outperform   | Outperform   | Underperform | Underperform | Outperform   | Underperform | Underperform | Underperform | Underperform |



# Why Use The Quads?

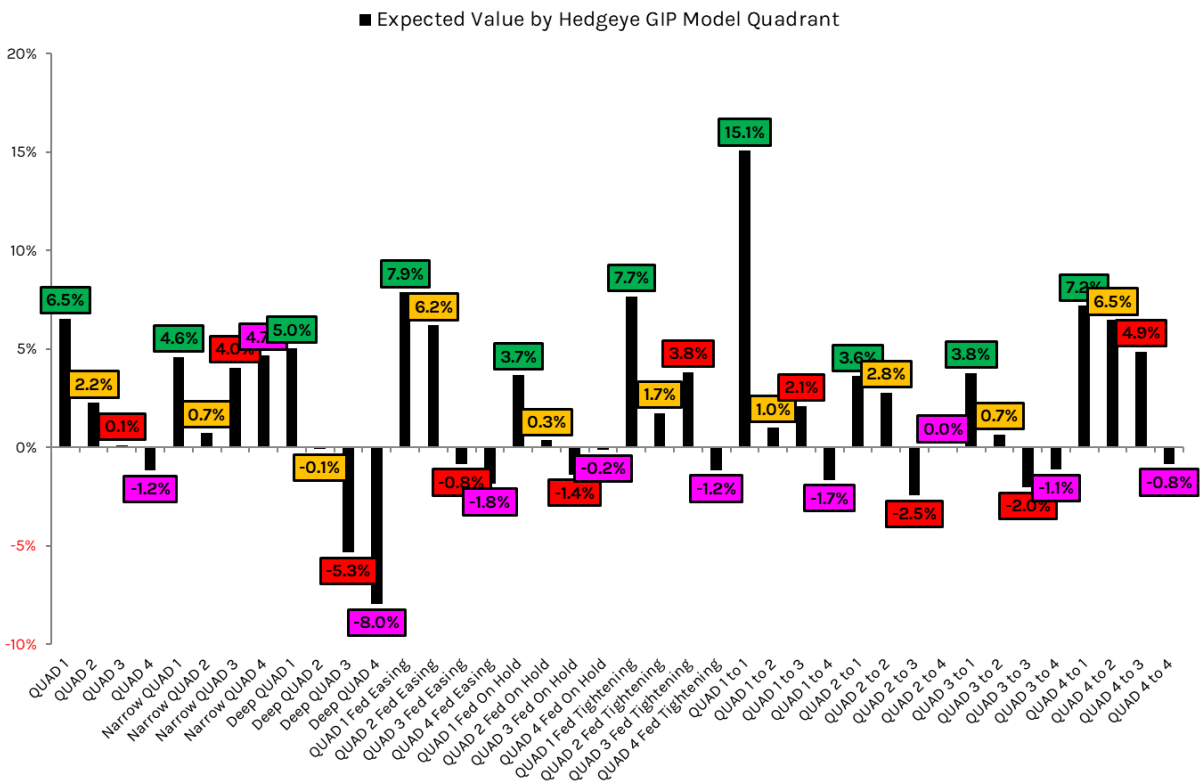
Contrary to conflicted and compromised financial literature that wants you to remain fully invested and fully diversified throughout, our DELIBERATE STUDY of financial market history shows meaningful deltas in absolute and relative asset performance tend to CLUSTER around PARTICULAR moments in time – usually in conjunction with regime changes in economic conditions.

S&P 500 Total Return Index



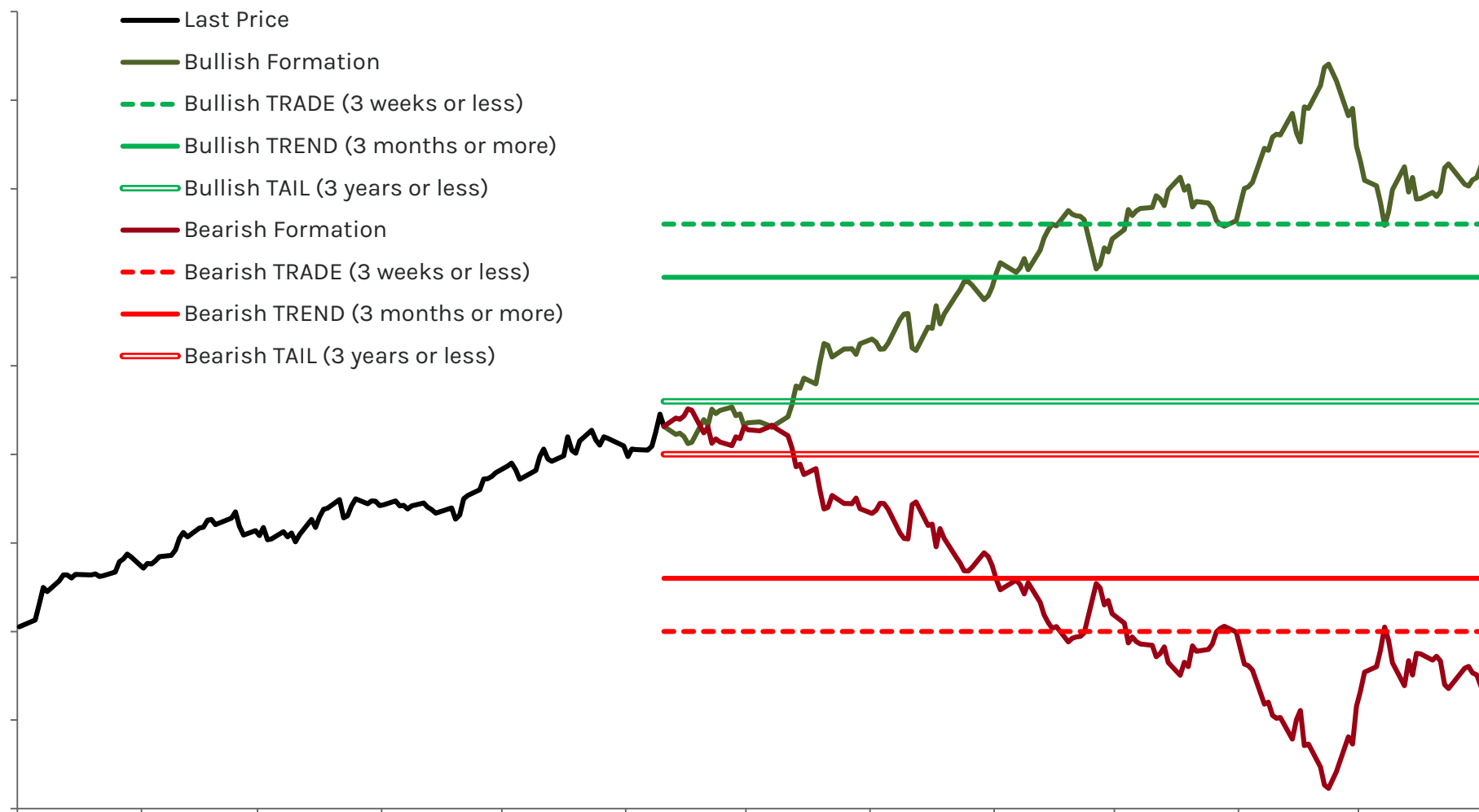
Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

S&P 500 Total Return Index



Data Source: Bloomberg. Asset classes include equities, fixed income, currencies and commodities. Quarterly observations starting in 1Q98.

# The Quads Provide A Reliable Starting Point For Asset Allocation And Keith's Quantitative Signaling Overlay Confirms Market Direction And Helps Risk Manage Core Exposures



Core to the process of selecting our core exposures is determining whether the ticker screens well from the perspective of Keith's proprietary risk management process, which employs PRICE, VOLUME and VOLATILITY as discrete factors in the calculus of levels that backtest well as critical momentum thresholds.

Assets where last price is greater than all three (in ascending order) are said to be in a "Bullish Formation" and all dips should be bought, inasmuch that assets in the converse "Bearish Formation" should be repeatedly shorted on strength.



# A | B Testing Process: Quantify Investor Consensus

Monitoring Sector and Style factor Performance allows us to quantitatively track the evolution of our Macro Themes. Additionally, MEASURING and MAPPING key data sets within the CFTC COT report removes the qualitative guesswork from the process of tracking and ultimately FADING crowded positioning.

## STYLE FACTOR PERFORMANCE\*

|         | FACTOR                  | 1D<br>% Chg | 1W<br>% Chg | 1M<br>% Chg | 3M<br>% Chg | 6M<br>% Chg | YTD<br>% Chg |
|---------|-------------------------|-------------|-------------|-------------|-------------|-------------|--------------|
| Debt    | High Debt/EV            | -0.1%       | -1.7%       | 9.3%        | 41.1%       | -25.4%      | -25.7%       |
|         | Low Debt/EV             | 0.3%        | 2.0%        | 5.2%        | 40.8%       | 4.6%        | 4.5%         |
| SI      | High Short Interest     | -0.4%       | -1.7%       | 9.8%        | 44.0%       | -21.2%      | -21.8%       |
|         | Low Short Interest      | 0.2%        | 0.7%        | 4.2%        | 32.3%       | -6.1%       | -6.2%        |
| BETA    | High Beta               | -0.1%       | -2.2%       | 12.5%       | 57.1%       | -31.5%      | -31.5%       |
|         | Low Beta                | 0.0%        | 1.6%        | 3.5%        | 26.2%       | 5.6%        | 5.6%         |
| YIELD   | High Yield              | -0.3%       | -2.5%       | 9.2%        | 37.5%       | -30.2%      | -30.6%       |
|         | Low Yield               | 0.3%        | 1.5%        | 6.4%        | 45.7%       | 1.8%        | 1.8%         |
| MKT CAP | MCAP Bottom 25%         | -0.4%       | -2.1%       | 9.0%        | 40.9%       | -28.9%      | -29.3%       |
|         | MCAP Top 25%            | 0.1%        | 1.2%        | 4.7%        | 34.5%       | -1.0%       | -1.0%        |
| Sales   | Top 25% Sales Growth    | -0.1%       | 0.2%        | 7.3%        | 44.8%       | -9.9%       | -9.8%        |
|         | Bottom 25% Sales Growth | -0.2%       | -1.1%       | 9.0%        | 36.2%       | -21.9%      | -22.0%       |
| EPS     | Top 25% EPS Growth      | -0.2%       | -0.7%       | 7.1%        | 42.0%       | -17.8%      | -18.0%       |
|         | Bottom 25% EPS Growth   | -0.2%       | -1.6%       | 8.9%        | 40.6%       | -21.2%      | -21.5%       |

\*Mean Performance of Top Quartile vs. Bottom Quartile, S&P500 Companies

## CFTC NON-COMMERCIAL NET LONG POSITIONING

|             | METRIC               | Latest    | W/W Chg  | 3M Ave    | 6M Ave    | 1Y Ave    | 3Y        |             | Z-Score |        |
|-------------|----------------------|-----------|----------|-----------|-----------|-----------|-----------|-------------|---------|--------|
|             |                      |           |          |           |           |           | Max       | Min         | 1Y      | 3Y     |
| EQUITIES    | SPX (Index + E-mini) | (318,953) | (78,748) | (215,864) | (103,414) | (36,422)  | 249,638   | (318,953)   | -2.48X  | -3.26X |
|             | VIX                  | (51,813)  | 15,640   | (36,159)  | (76,020)  | (110,665) | 92,913    | (218,362)   | 0.99X   | 0.42X  |
|             | Russell 2000 (mini)  | 10,336    | (1,566)  | (6,700)   | 15,196    | (23,909)  | 72,749    | (140,763)   | 0.55X   | 0.35X  |
|             | Dow Jones (mini)     | (28,732)  | (14,648) | (13,068)  | 5,480     | 22,121    | 95,976    | (28,732)    | -2.26X  | -2.32X |
|             | Nasdaq (mini)        | 27,388    | 14,803   | 12,589    | 17,211    | 22,479    | 57,025    | (24,815)    | 0.46X   | 0.57X  |
| RATES       | 10Y UST              | (26,162)  | 19,524   | (33,242)  | (97,417)  | (182,501) | 303,388   | (758,490)   | 1.21X   | 0.72X  |
|             | 2Y UST               | (284,667) | (41,429) | (210,227) | (198,771) | (229,052) | 67,767    | (421,551)   | -0.64X  | -0.88X |
|             | 5Y UST               | (150,396) | 71,634   | (194,714) | (188,421) | (173,934) | 65,383    | (866,140)   | 0.24X   | 0.73X  |
|             | UST Bonds            | (87,285)  | 5,907    | (92,403)  | (69,928)  | (60,677)  | 122,839   | (142,810)   | -0.95X  | -1.18X |
|             | 30D Fed Funds        | 467,509   | (18,096) | 389,745   | 363,330   | 230,666   | 488,558   | (286,025)   | 1.32X   | 2.18X  |
| CURRENCIES  | Eurodollar           | 118,886   | 54,326   | (435,095) | 341,937   | 766,976   | 2,134,274 | (3,110,209) | -0.84X  | 0.69X  |
|             | USD\$                | (5,338)   | (10,037) | 12,409    | 14,256    | 21,923    | 43,033    | (10,666)    | -2.68X  | -1.47X |
|             | JPY                  | 22,592    | 5,036    | 24,961    | 535       | (3,789)   | 33,088    | (140,151)   | 0.91X   | 1.50X  |
|             | EUR                  | 118,244   | 20,695   | 81,305    | 11,357    | (25,221)  | 147,318   | (123,765)   | 2.17X   | 1.32X  |
|             | GBP                  | (15,447)  | 7,599    | (7,586)   | 6,866     | (29,022)  | 49,216    | (107,406)   | 0.31X   | 0.17X  |
| COMMODITIES | AUD                  | (5,026)   | 29,216   | (32,782)  | (34,947)  | (42,854)  | 77,969    | (74,181)    | 3.14X   | 0.47X  |
|             | CAD                  | (25,922)  | (980)    | (29,651)  | (8,171)   | 5,589     | 78,001    | (67,121)    | -1.31X  | -0.67X |
|             | MXN                  | 22,422    | 23,256   | 5,965     | 71,768    | 97,273    | 170,379   | (21,903)    | -1.28X  | -1.11X |
|             | NZD                  | (1,942)   | 9,299    | (13,708)  | (10,677)  | (19,242)  | 35,981    | (42,544)    | 1.38X   | 0.40X  |
|             | CHF                  | 1,644     | (90)     | 5,796     | 3,537     | (4,688)   | 9,029     | (47,216)    | 0.69X   | 1.21X  |
| COMMODITIES | CRUDE OIL            | 553,573   | (18,719) | 526,570   | 496,632   | 467,612   | 784,290   | 332,714     | 1.39X   | 0.24X  |
|             | GOLD                 | 143,070   | 15,765   | 168,524   | 208,804   | 225,335   | 292,066   | (103,009)   | -1.90X  | 0.17X  |
|             | COPPER               | 7,937     | (2,581)  | (13,320)  | (17,932)  | (26,876)  | 67,602    | (60,135)    | 1.86X   | 0.12X  |
|             | Natural Gas          | (69,566)  | (29,515) | (67,580)  | (142,609) | (159,139) | 30,134    | (262,534)   | 1.38X   | 0.36X  |
|             | RBOB Gasoline        | 50,602    | 2,556    | 74,961    | 91,287    | 82,107    | 129,000   | 38,857      | -1.44X  | -1.96X |
|             | ULSD Heating Oil     | 6,853     | 3,336    | (2,849)   | (9,102)   | (5,252)   | 67,696    | (27,674)    | 1.29X   | -0.27X |
|             | Silver               | 36,084    | 3,294    | 29,383    | 45,698    | 48,539    | 80,646    | (30,158)    | -0.75X  | 0.27X  |
|             | Platinum             | 17,397    | (975)    | 17,906    | 35,753    | 33,584    | 69,306    | (11,540)    | -0.88X  | -0.26X |
|             | Aluminum             | 163,475   | (2,043)  | 159,128   | 161,536   | 157,727   | 168,292   | 122,356     | 0.55X   | 1.31X  |
|             | Nickel               | 42,230    | (365)    | 42,658    | 44,026    | 37,006    | 47,708    | 13,508      | 0.60X   | 1.21X  |
|             | Corn                 | (229,840) | 27,262   | (164,653) | (97,123)  | (32,723)  | 372,754   | (270,560)   | -1.46X  | -1.57X |
|             | Soybeans             | 49,908    | 4,549    | 37,595    | 12,315    | 4,105     | 210,365   | (148,817)   | 1.06X   | 0.60X  |
|             | Wheat                | (19,383)  | (6,185)  | 7,637     | 21,088    | 18,320    | 63,219    | (119,350)   | -1.93X  | -0.23X |
|             | Live Cattle          | 34,531    | (3,261)  | 34,507    | 51,935    | 56,612    | 183,134   | 19,421      | -0.75X  | -1.23X |
|             | Lean Hogs            | 23,723    | 2,028    | 31,147    | 31,315    | 42,208    | 97,769    | (11,151)    | -1.10X  | -0.59X |
|             | Sugar                | 86,033    | 17,152   | 28,509    | 82,136    | (15,633)  | 228,364   | (205,161)   | 0.84X   | 1.47X  |
|             | Cotton               | 14,036    | (3,679)  | (788)     | 12,226    | (2,127)   | 129,851   | (37,827)    | 0.71X   | -0.56X |
|             | Coffee               | (13,893)  | (6,944)  | 13,506    | 16,136    | (251)     | 46,860    | (106,651)   | -0.49X  | 0.54X  |
|             | Cocoa                | 3,156     | (4,262)  | 553       | 29,723    | 31,063    | 81,269    | (43,846)    | -0.91X  | -0.39X |
|             | Orange Juice         | 1,353     | (932)    | 848       | (2,568)   | (4,601)   | 5,540     | (9,416)     | 1.81X   | 1.08X  |

# A | B Testing Process: Measure & Map The Volatility of Volatility

HEDGEYE

Deliberately studying the VOLATILITY OF VOLATILITY leads to high-probability decision-making opportunities. TIMING matters.

| TIME WINDOW SETTING:<br>VOLATILITY_30D<br>PUT_IMP_VOL_30D |               | TOTAL RETURN<br>PERFORMANCE | IVOL PREMIUM/DISCOUNT<br>IVOL PREM % |           |        |        |             |             | REALIZED VOLATILITY TRENDS |                    |                    | IMPLIED VOLATILITY TRENDS |                    |                    |
|---|---------------|-----------------------------|--------------------------------------|-----------|--------|--------|-------------|-------------|----------------------------|--------------------|--------------------|---------------------------|--------------------|--------------------|
|   | TICKER        | YTD %                       | IVOL / RVOL                          | Yesterday | 1W Ago | 1M Ago | TTM Z-Score | 3Yr Z-Score | RVOL<br>CURRENT            | PERCENTILE<br>MM % | PERCENTILE<br>10YR | IVOL<br>CURRENT           | PERCENTILE<br>MM % | PERCENTILE<br>10YR |
| US EQUITIES   |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
|   |               |                             | CURRENT                              |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
| Power Shares QQQ Trust ETF                                | QQQ US EQUITY | 16.50%                      | 21%                                  | 26%       | 29%    | -12%   | 0.4         | 0.5         | 22.8                       | -22%               | 83%                | 27.6                      | 6%                 | 94%                |
| Technology Sector SPDR ETF                                | XLK US EQUITY | 14.23%                      | 8%                                   | 15%       | 19%    | -14%   | 0.0         | 0.0         | 27.0                       | -18%               | 90%                | 29.2                      | 3%                 | 94%                |
| Communication Services SPDR ETF                           | XLC US EQUITY | 4.08%                       | 18%                                  | 16%       | 25%    | -7%    | 0.2         |             | 23.1                       | -17%               | 66%                | 27.3                      | 5%                 | 80%                |
| Consumer Discretionary Sector SPDR ETF                    | XLV US EQUITY | 3.10%                       | 7%                                   | 15%       | 21%    | -11%   | -0.2        | -0.2        | 27.7                       | -8%                | 92%                | 29.7                      | 11%                | 95%                |
| Health Care Sector SPDR ETF                               | XLV US EQUITY | -0.96%                      | 4%                                   | 1%        | 17%    | -9%    | -0.1        | -0.1        | 23.5                       | -1%                | 91%                | 24.3                      | 13%                | 94%                |
| SPDR S&P 500 ETF Trust                                    | SPY US EQUITY | -2.47%                      | -3%                                  | 1%        | 4%     | -16%   | -0.3        | -0.3        | 27.1                       | -2%                | 92%                | 26.3                      | 12%                | 94%                |
| Consumer Staples Sector SPDR ETF                          | XLP US EQUITY | -5.05%                      | 1%                                   | 9%        | 19%    | -20%   | -0.5        | -0.3        | 19.1                       | -15%               | 93%                | 19.2                      | 7%                 | 93%                |
| Materials Sector SPDR ETF                                 | XLB US EQUITY | -7.55%                      | -6%                                  | 4%        | 5%     | -22%   | -0.3        | -0.4        | 35.1                       | -1%                | 94%                | 33.1                      | 20%                | 94%                |
| Utilities Sector SPDR ETF                                 | XLU US EQUITY | -9.23%                      | -6%                                  | -5%       | 0%     | -36%   | -0.3        | -0.4        | 27.4                       | -16%               | 96%                | 25.7                      | 22%                | 97%                |
| Vanguard Real Estate REIT ETF                             | VNO US EQUITY | -13.13%                     | -18%                                 | -16%      | -4%    | -21%   | -0.5        | -0.7        | 42.6                       | 10%                | 96%                | 35.1                      | 14%                | 96%                |
| I-Shares Russell 2000 ETF                                 | IWM US EQUITY | -13.43%                     | -7%                                  | -9%       | 1%     | -18%   | -0.5        | -0.6        | 44.8                       | 1%                 | 96%                | 41.5                      | 13%                | 97%                |
| Industrials Sector SPDR ETF                               | XLI US EQUITY | -14.19%                     | -20%                                 | -10%      | -7%    | -18%   | -0.7        | -0.8        | 42.8                       | 15%                | 97%                | 34.3                      | 13%                | 96%                |
| Financials Sector SPDR ETF                                | XLF US EQUITY | -21.78%                     | -18%                                 | -21%      | -6%    | -12%   | -0.7        | -0.9        | 48.2                       | 17%                | 96%                | 39.6                      | 10%                | 95%                |
| Energy Sector SPDR ETF                                    | XLE US EQUITY | -32.20%                     | -22%                                 | -20%      | -12%   | -27%   | -0.6        | -1.0        | 60.2                       | -5%                | 97%                | 47.1                      | 2%                 | 97%                |
| INTERNATIONAL EQUITIES                                    |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
| I-Shares MSCI Japan ETF                                   | EWJ US EQUITY | -4.01%                      | -4%                                  | 0%        | 5%     | -9%    | -0.3        | -0.3        | 25.0                       | 12%                | 89%                | 24.0                      | 18%                | 90%                |
| I-Shares China Large-Cap ETF                              | FXI US EQUITY | -6.12%                      | -18%                                 | -14%      | -7%    | -9%    | -0.7        | -0.9        | 28.6                       | -4%                | 82%                | 23.5                      | -14%               | 61%                |
| I-Shares MSCI Emerging Markets ETF                        | EEM US EQUITY | -9.41%                      | -8%                                  | -6%       | 8%     | -7%    | -0.5        | -0.5        | 29.6                       | -1%                | 90%                | 27.1                      | -2%                | 87%                |
| Euro Stoxx 50 Index                                       | SX5E INDEX    | -11.83%                     | -13%                                 | -16%      | 1%     | -22%   | -0.3        | -0.7        | 33.0                       | -4%                | 92%                | 28.7                      | 8%                 | 90%                |
| CURRENCIES  |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
| Currency Shares Japanese Yen ETF                          | FXJ US EQUITY | 1.27%                       | -6%                                  | -5%       | 6%     | 2%     | -0.3        | -0.7        | 6.4                        | 18%                | 25%                | 6.0                       | 8%                 | 9%                 |
| PowerShares US Dollar Index ETF                           | UUP US EQUITY | 1.04%                       | 40%                                  | 43%       | 58%    | 21%    | 0.5         | 0.4         | 6.5                        | 9%                 | 45%                | 9.1                       | 25%                | 71%                |
| Currency Shares Euro Trust ETF                            | FXE US EQUITY | -0.09%                      | 5%                                   | 4%        | 13%    | -8%    | 0.0         | 0.2         | 7.2                        | 4%                 | 37%                | 7.6                       | 19%                | 38%                |
| Currency Shares British Pound ETF                         | FXB US EQUITY | -6.02%                      | -6%                                  | -2%       | 1%     | 14%    | -0.3        | -0.5        | 10.3                       | 18%                | 84%                | 9.7                       | -3%                | 70%                |
| COMMODITIES   |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
| SPDR Gold Shares ETF                                      | GLD US EQUITY | 15.53%                      | 14%                                  | 8%        | 11%    | 8%     | 0.6         | 0.6         | 15.0                       | -4%                | 61%                | 17.2                      | 1%                 | 73%                |
| PowerShares DB Agriculture Fund ETF                       | DBA US EQUITY | -18.60%                     | 149%                                 | 150%      | 140%   | 66%    | 3.7         | 4.5         | 10.5                       | -26%               | 34%                | 26.1                      | 12%                | 98%                |
| United States Natural Gas Fund ETF                        | UNG US EQUITY | -39.86%                     | 28%                                  | 27%       | 20%    | -4%    | 0.3         | 0.6         | 46.0                       | -35%               | 79%                | 58.9                      | -13%               | 94%                |
| United States Oil Fund ETF                                | USO US EQUITY | -71.72%                     | -1%                                  | -2%       | -4%    | -41%   | 0.0         | -0.2        | 49.7                       | -61%               | 92%                | 49.1                      | -35%               | 91%                |
| FIXED INCOME  |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |
| I-Shares 20+ Year Treasury Bond ETF                       | TLT US EQUITY | 20.74%                      | -2%                                  | -2%       | -3%    | -17%   | 0.4         | 0.0         | 16.0                       | -14%               | 76%                | 15.7                      | 2%                 | 81%                |
| I-Shares 7-10 Year Treasury Bond ETF                      | IEF US EQUITY | 10.81%                      | 50%                                  | 74%       | 33%    | 3%     | 0.4         | 0.4         | 5.0                        | -6%                | 35%                | 7.5                       | 38%                | 81%                |
| I-Shares iBOXX IG Corporate Bond ETF                      | LQD US EQUITY | 5.95%                       | 20%                                  | 11%       | 18%    | -7%    | 0.6         | 0.4         | 8.3                        | -11%               | 94%                | 10.0                      | 15%                | 97%                |
| I-Shares J.P. Morgan USD EM Bond ETF                      | EMB US EQUITY | -3.14%                      | 10%                                  | 9%        | 13%    | 3%     | 0.1         | -0.2        | 12.4                       | -13%               | 93%                | 13.7                      | -7%                | 94%                |
| I-Shares iBOXX HY Corporate Bond ETF                      | HYG US EQUITY | -3.70%                      | 28%                                  | 34%       | 26%    | -6%    | 0.6         | 0.5         | 12.6                       | -16%               | 93%                | 16.0                      | 14%                | 96%                |
| Data Source: CBOE, CME, Bloomberg                         |               |                             |                                      |           |        |        |             |             |                            |                    |                    |                           |                    |                    |

Data Source: CBOE, CME, Bloomberg

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