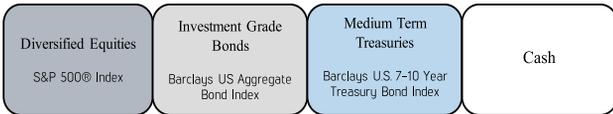


Research Note: Market Timing with Volatility Indexes

RESEARCH GOAL

The aim of this research note is to provide an example of a diversified equity and bond portfolio that uses a dynamic allocation rule to promote capital preservation and favor assets that are likely to perform well given the volatility environment.



VOLATILITY-BASED ASSET ALLOCATION

Option-implied volatility conveys market expectations regarding the level of impending uncertainty in the underlying security returns, and an uptrend in implied volatility may herald a period of heightened risk and downside potential. The key concept underpinning the strategy is that the interplay between benchmark indexes of interest rate and equity volatilities—TYVIXSM Index¹ and VIX[®] Index², respectively—has historically predicted the relative performance of diversified equities, bonds, and cash.

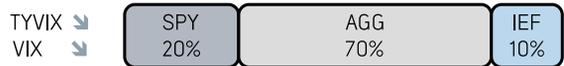
FOUR REGIMES

We define the current state of volatility as a combination of two indicators:

- TYVIX High/Low
- VIX High/Low.

Each of the four regimes lead to a different allocation based on our market intuition.

Regime 1: *Broad Market Calm*



Regime 2: *Isolated Anxiety in Bond Markets*



Regime 3: *Isolated Anxiety in Equity Markets*



Regime 4: *Broad Market Panic*



3

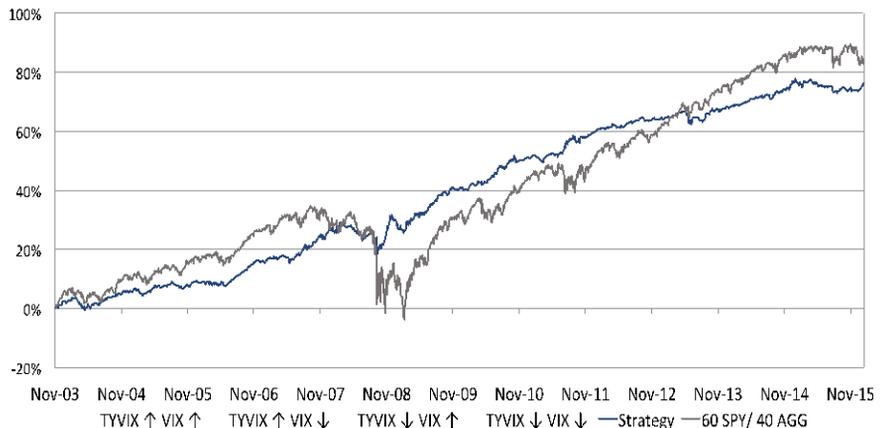
SIMULATED HISTORICAL PERFORMANCE

Simulated performance is below with a 60% Equity (SPY) and 40% Fixed Income (AGG) benchmark for comparison.

PERFORMANCE STATISTICS

	Strategy	60/40
Sharpe Ratio	1.41	0.58
Ann. Return	6.25%	6.81%
Volatility	4.41%	11.56%
Max Drawdown	10.98%	34.70%
Max Recovery	46 days	418 days

Note: stats for gross returns



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