POLICYSCOPE DATA BACKTEST RESULTS

ACCURATELY ANTICIPATING VIX VOLATILITY (2019-2020)

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BCMstrategy, Inc.

ABOUT BCMSTRATEGY, INC.

BCMstrategy, Inc. helps investors detect, measure, and manage systematic risks associated with public policy. The company quantifies public policy risks using 9+ layers of patented analytical automation without using sentiment analysis. PolicyScope™ data has been mapped to 300+ economic sectors and 9 asset class types.

PolicyScope™ data is available to institution investors in three formats.

- The complete dataset is available to institutional investors exclusively through the Bloomberg Enterprise Access Point (https://eap.bloomberg.com/catalogs/bbg/products/BCMStrategiesPolicyScopeEdition1).

- Customized single-issue dashboards and signals from BCMstrategy, Inc. can be accessed through APIs or on the web.

- Coming Soon: An app for the Bloomberg Terminal will be available during 4Q2021.

BCMstrategy, Inc. is the sole author of this report. BCMstrategy, Inc. contributed correlations interpretation and the content of this report as well as sample quantitative PolicyScope™ data generated by the patented process. All errors, omissions, oversights, and mistakes remain the sole responsibility of BCMstrategy, Inc.

ABOUT INVISAGEALPHA

InvisageAlpha is a data analytics platform that helps investors use alternative data to generate performance. InvisageAlpha uses a proprietary machine learning engine that extracts investment signals and ideas from any form of data or narrative content. Their platform provides a set of tools to integrate signals into the investor process to drive performance and reduce risk.

InvisageAlpha is owned by AltHub, the leading provider of modelling, sales enablement tools, and business development solutions for the Alt Data Market.

InvisageAlpha contributed backtesting services and mathematical correlations analysis regarding PolicyScope™ data.

Background: PolicyScope™ data quantifies public policy risk using 9+ layers of patented analytical automation. Investors use it to detect, measure, and manage systematic risks from public policy volatility.

With two years of data (2019-2020) now in the database, BCMstrategy, Inc. and InvisageAlpha partnered to conduct backtests of selected quantitative data related to specific lexicon terms. The results show a clear advance correlation between PolicyScope™ data and market volatility in relation to both the S&P and the VIX.

The VIX was chosen because this index is highly responsive to the news cycle in general and public policy in particular. It was also chosen because the VIX is based on the S&P (specifically, SPX options prices). We wanted to be able to compare how PolicyScope™ data performed in relation both to realized equity market volatility (the S&P) and volatility expectations articulated in daily VIX market prices.

Main Findings: PolicyScope™ data delivered significant forward indicators VIX volatility, often with a two- to three-week lead time during both the pre-pandemic and pandemic periods covered by the backtest. Using the same four lexicon terms (trade war, LIBOR, CBDC, Cryptocurrency) as were tested against the S&P, PolicyScope™ data anticipated VIX volatility across in relation to a range of official sector activity types (for all lexicon terms) and one lexicon term (CBDC), both before and during the pandemic with a high degree of correlation:
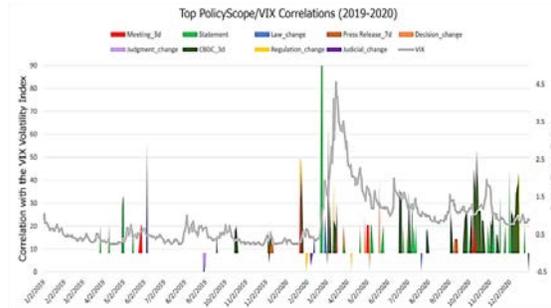
The backtest results thus show that strategic investors seeking superior alpha capture from investments in the VIX will increase their ability to move closer to the efficient frontier using PolicyScope™ data when trading volatility.

Additional research will be needed. This initial backtest did not attempt to determine whether the anticipatory volatility signals regarding the VIX also served as advance indicators of realized volatility in the S&P. The chart above depicts only the top results. A more comprehensive assessment using a broader range of lexicon terms would be warranted. We expect at least some market participants may find this data of interest because they already use underlying options market data and VIX futures for purposes of pricing VIX options.[1]

In addition, the chart above reveals that the activity types are those most correlated with headline-generating activity. *Additional alpha capture could thus be achieved by tracking with a high level of precision additional activity types (e.g., speeches) for specific high-value lexicon terms (e.g., supply chain diversification)*.

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[1] *A Tale of Two Indices*, Peter Carr and Liuren Wu,The Journal of Derivatives (Spring 2006).

CORRELATIONS AND DAYS IN ADVANCE (LEXICON TERMS)

PRE-PANDEMIC PERIOD

(2019-FEB. 2020)

Unsurprisingly, the lowest number of days in advance and the lowest correlations between our tested lexicon terms and the VIX was with respect to trade war. During 2019, markets were reacting strongly to headlines and actions related to trade war especially in the United States. Relatively low advance notice but relatively high (54%) correlations regarding LIBOR make sense for a different reason. VIX traders watch interest rate and risk-free benchmark shifts with a high degree of attention because many derivative contracts are priced in relation to a risk-free rate. This is a technical market where technical moves in benchmark rates would be noticed quickly and acted upon.

Top PolicyScope/VIX Correlations (Lexicon Terms)(2019- Feb2020)
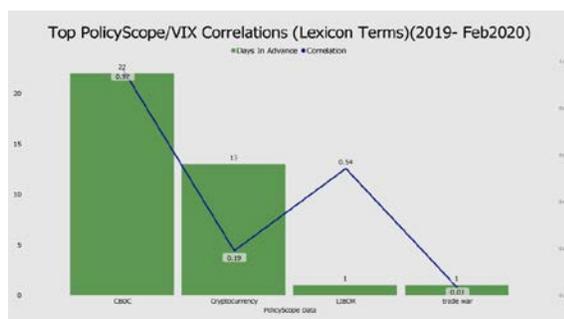
Relatively high advance warning of volatility regarding both digital currency issues (CBDC and cryptocurrency) during 2019 is also intuitively correct.

The VIX is often seen as a forward indicator of global macro risks that can impact

markets. Few issues are more global in their impact that the potential issuance of a sovereign digital currency, particularly if the issuer is a reserve currency central bank. *The broader public and mainstream media may not care much about CBDCs, but the PolicyScope™/VIX correlations during 2019 indicate that hyper vigilant VIX traders notice every technical move central banks make in this space….with a 22 day lag relative to PolicyScope™ data.*

PANDEMIC PERIOD

(FEB. 2020-DEC. 2020)

Relative correlations and advance notice periods changed during the pandemic. LIBOR remained a top performer, anticipating market volatility 15 days in advance with a 25% correlation. But the trade war term moved to the most advance signal (22 days), albeit with a low correlation (10%). This is also intuitive.

Top PolicyScope/VIX Correlations (Lexicon Terms)(during COVID 2020)
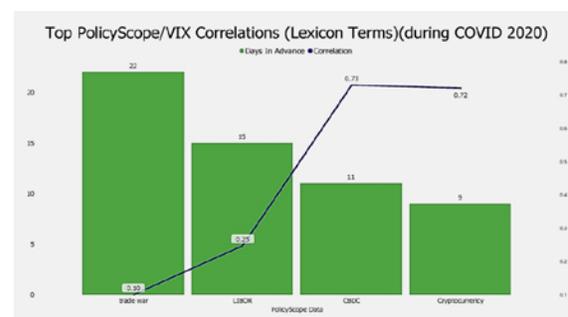
When markets are pricing in pandemic-related activity and policymakers stop talking about trade wars except with respect

to very targeted supply chain issues (e.g., health care, rare earths, automobiles), a broad market aggregate like the VIX that anticipates general market volatility will not be highly correlated with trade war issues.

Pandemic era correlations regarding both CBDC and cryptocurrency jumped to just north of 70% as governments accelerated their efforts to deliver competitive payments for an increasingly digital and quarantined planet.

CORRELATIONS AND DAYS IN ADVANCE: ACTIVITY TYPES

The VIX correlations showed a similar reaction function as the equity markets with respect to activity types during both the pre-pandemic and pandemic periods. The distribution of correlations and advance notice again shifted across the two periods. The backtest results point to significant informational advantages and alpha capture opportunities for VI traders specifically in relation to the public policy cycle, particularly for activity types with long (e.g., 22 days) notice periods.

PRE-PANDEMIC PERIOD

(2019-FEB. 2020)

Low single digit advance notice days and high (83%-99%) correlations indicate unsurprisingly that VIX traders operate on a par with equity traders to absorb within a week the kinds of activities that generate headlines (proposal, statement, regulation):

Top PolicyScope/VIX Correlations (Activity Types)(2019- Feb2020)
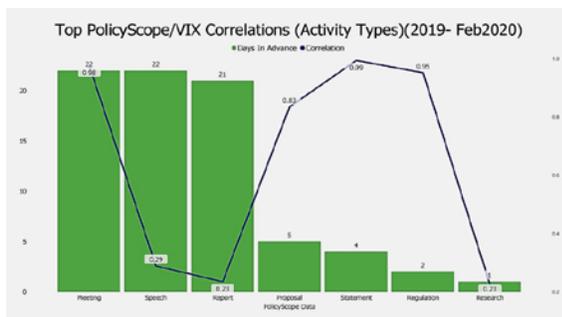
VIX traders are also far more sensitive to meetings, registering a 98% correlation relative to the equity market's 43% reading. But the time lag to price in the informational content from a meeting is long: 22 days. We see this as another significant alpha capture opportunity made available through PolicyScope™ data.
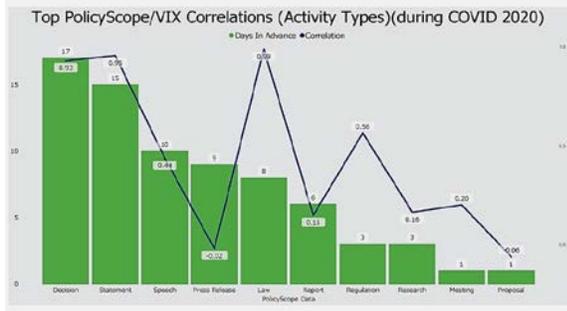
Correlations for the activity types that are less final (speech, report, research) were unsurprisingly low, which again signals opportunities for alpha capture given the long lead times. Interestingly, however, the lag from research releases was considerably less than for speeches and reports. The outcome is consistent with behavior patterns in VIX and futures/options trading in which expert investors scour new research releases for hints about monetary policy shifts.

PANDEMIC PERIOD

(FEB. 2020-DEC. 2020)

Public policy reaction functions shifted significantly during the pandemic. During a crisis period, government officials generally issue more statements and those statements provide meaningful indicators for future policy action. Correlations regarding statements dropped slightly during the pandemic period (down to 95%) but the time period for reaction jumped from four days to 15 days.

Top PolicyScope/VIX Correlations (Activity Types)(during COVID 2020)

The advance notice of market volatility regarding meetings plummeted to 1 day, with correlations also dropping from 99% to 20%.

These data deliver a striking picture of crisis decision-making during 2020. Strong reaction functions to final decisions (laws regulations, statements, decisions) are to be expected particularly the often hair-trigger responses capital markets deliver in relation to headlines. But the time periods involved even for the VIX (which is more sensitive to new developments) suggests strongly that the market is slow to react to public policy.

Reaction functions of 3-10 days for laws and regulations could be explained away by the possibility that markets would already have priced in related volatility in prior periods in response to headlines about pending legislation. *Long lead times regarding decisions, statements, and speeches indicate that amid a pandemic it took the VIX market two to three weeks to absorb technical public policy shifts regarding non-pandemic policy matters*.

We view these data as illustrating concretely the scale of the informational advantages that accrue to capital market participants that use PolicyScope™ data to measure and manage their exposure to technical shifts in public policy. Even when massive

distractions (like a pandemic) exist for humans, the automated patented process that generates and delivers PolicyScope™ data is not distracted or overwhelmed. It can deliver alerts and insights even amid significant disruptions.

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