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What's Priced?

Understanding the relationship between macroeconomics and market pricing

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The Multi-Asset Strategies & Solutions (MASS) team is the investment group at the heart of BlackRock's portfolio construction, asset allocation, and active management ecosystem. MASS draws on the full toolkit of BlackRock's index, factor, and alpha-seeking investment capabilities to deliver precise investment outcomes and cutting-edge alpha insights. MASS constructs active asset allocation strategies and whole portfolio solutions across a wide spectrum of commingled funds, separate accounts, model portfolios, and outsourcing solutions in the wealth and institutional channels.

Summary

An important aspect of being a multi-asset investor is the ability to interpret macroeconomic developments, assess how they impact one's investment views, and as a result, determine whether to make changes in portfolio positioning. Doing this well requires monitoring and interpreting a wide array of data that reflects the status of the global economy in areas such as growth, inflation and monetary policy. However, given the varying frequencies with which data releases can occur and the different levels of importance one can attach to them, there is a natural behavioral risk that investors who are analyzing the data will emphasize data that confirms their biases. If one has a thesis that the economy is moving in a certain direction, it is plausible that one would favor any data release that confirms that view, and discount any release that is to the contrary.

In recent years, our multi-asset platform built a series of structured tools that drive a rigorous approach towards analyzing economic data and help mitigate any potential confirmation biases. In other words, we let the tools tell us what the economy is doing instead of superimposing what we think the economy is doing on the data. The most important thing while seeking to generate returns from tactical macro views is to correctly interpret both the macro view as well as the associated market pricing. When is the market pricing macroeconomic fundamentals differently than us? That question is the genesis of our *What's Priced* framework. This paper will introduce the tool and showcase its value through three case studies.

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Understanding the *'What's Priced?'* framework

What's Priced is a structured effort to measure the macroeconomic environment as priced by the market, and then compare it with our own read on the macroeconomy. We measure the disconnect between market pricing and our own view of the fundamentals to construct a "score," estimating how disconnected pricing has become from the fundamentals. When the score is extreme, markets are trading in an abnormal range relative to the fundamentals. This could present a trading opportunity–for example, the market's outlook on growth may be too pessimistic vis-à-vis our own views and therefore we should buy equities.

Pricing distortions relative to our read of the fundamentals may arise due to our own forecasting being at odds with the market; market attention focusing on something other than fundamentals; or technical factors.

There are a few reasons why market pricing of the macroeconomic environment can become disconnected relative to our read on the fundamentals in the short term:

1. The market is pricing those macroeconomic fundamentals differently to how we have forecasted them. For example, our growth forecast is inconsistent with others, or we have missed something.
2. The market is pricing other things as well as macro fundamentals. For example, rising uncertainty due to increasing geopolitical tensions leads to an equity market sell-off.
3. The market is driven by technical factors, such as flash crashes or forced sellers fueling price declines.

Over the long run, we believe that any pricing distortions as a function of uncertainties in (2) will disappear and pricing will revert to being driven by fundamentals. This is also true of (3), which is short term in nature. Trying to forecast the outcome of uncertain events is a challenge–for example, predicting an extreme weather event or political events such as elections–and not something we believe we can achieve consistently and successfully. However, we can continue to refine and improve our ability to analyse and forecast macroeconomic variables, to mitigate against (1). To use *What's Priced* effectively, we need to be able to track and understand factors such as (2) and (3), hence the tool cannot be used as an automatic buy or sell signal, but we believe it does invite important debate and lead to more informed decision making.

In our framework, the three pillars to macroeconomic fundamentals are Growth, Inflation and Monetary Policy. To measure Growth, we developed a set of leading economic indicators that cover the major developed economies of the world. These indicators seek to capture the underlying trends in economic growth and allow us to distill an array of incoming information into impulses around the level and acceleration of economic activity. For Inflation, our indicators rely on survey-based inflation forecasts to help measure the fundamentals. On Policy, we use quantitative inputs, such as text analysis of policy speeches, to form insights around the future path of monetary policy.

In order to interpret the market's read of the macroeconomy, we constructed pricing factors to monitor Growth, Inflation and Policy. Within *What's Priced*, these pricing factors are monitored versus changes in the aforementioned indicators. For example, the leading economic indicators that we developed to monitor Growth are compared versus a combination of equity and 10-year government bond returns, the theory being that growth is the most important driver for these asset returns. This comparison generates a growth score, which measures the opportunity to overweight or underweight equities. Similarly, the survey-based inflation forecasts are compared versus 10-year inflation breakevens, on the basis that the latter indicate the market's outlook on inflation in the future.[2] This comparison yields an inflation score, which evaluates the opportunity to overweight or underweight inflation breakeven. Lastly, our text analysis of policy speeches are compared against the number of rate hikes or cuts priced over the next two years in the market. This comparison delivers a policy score, to assess opportunities to overweight or underweight U.S. Treasuries. Central to the creation of *What's Priced* is the fact that the fundamental indicators and the pricing factors are distinct and do not overlap–for example, the fundamental indicators do not contain asset prices. This is important because we are looking to compare the two. Including one in the other would lead to double counting.

We construct fundamental indicators and pricing factors for three pillars–Growth, Inflation and Policy. We track the relative relationship between fundamentals and pricing for each pillar. *'What's Priced?'* scores this comparison, and extreme scores can point to a trading opportunity for each pillar.

2 A breakeven is 10-year breakeven inflation rate = (10-year nominal Treasury yield) - (10-year TIPS yield).

What's Priced: How are the scores generated?

We use the same approach to generate scores in the *What's Priced* framework across Growth, Inflation and Policy. In each case, we estimate the relationship between our macroeconomic indicator and the pricing factor using an exponentially-weighted least squares regression. This approach places a higher weight on new information and thus relies more on recent data. It is able to learn and adapt more quickly to changing environmental conditions (whether it be pricing innovations or new macroeconomic data releases). Importantly, extreme scores do not always equate to trading opportunities. Understanding what might be driving that extreme score is crucial as evolving market conditions may warrant these distortions. In the following three case studies however, we illustrate the *What's Priced* framework by focusing on instances where extreme scores did lead to such trading opportunities.

The first case study, on Growth, is an example from late 2018 when market pricing was forecasting more deceleration in growth than our forecasts. *What's Priced* suggested buying equities by the end of Q4 2018. The second case study, on Inflation, looks at Donald Trump's election in November 2016 and the increased inflation expectations resulting from promises to increase infrastructure spending. As we know now, these spending plans did not manifest themselves. This optimism reflected in markets was not reflected in the data, so *What's Priced* pointed to going underweight inflation breakevens (in anticipation of their decline). The third case study, on Policy, looks back at the launch of Operation Twist in September 2011. The market interpreted this action as being less dovish than warranted by fundamentals and as a result, *What's Priced* suggested overweighting U.S. Treasuries in anticipation of a decline in yields (as the Fed remained dovish).

Three case studies illustrate periods when extreme scores led to trading opportunities

Macroeconomic fundamental	Macro indicator to measure fundamentals	Pricing factor to measure market's estimate of fundamentals	Case study to illustrate disconnect between macro indicator and pricing factor
Growth	Leading economic indicators	Combination of equity and 10-year government bond returns	**Q4 2018:** Fears of a growth slowdown
Inflation	Survey-based inflation forecasts	10-year inflation breakevens	**Q1 2017:** Inflation exuberance following Donald Trump's election
Policy	Text-based analysis of central bank policy speeches	Number of rate hikes or cuts priced by the market over the next two years	**Q3 2011:** Operation Twist–the market pricing in less dovish policy than warranted by fundamentals

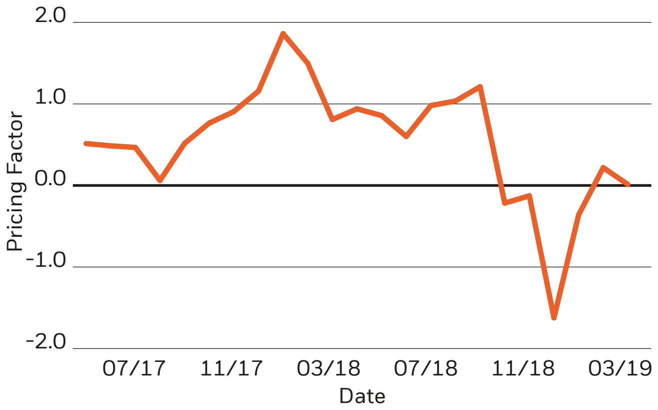
Case study 1

2018 growth scare

In 2018, both global stocks and global bonds delivered negative returns–something that had only happened twice since 1991. Q4 2018 in particular was characterized by fears around a deceleration in economic growth given trade disputes between the U.S. and China and a hawkish Fed. U.S. growth was positive but decelerating. The rest of the world was also exhibiting sluggish growth and it was unclear where positive catalysts could emerge from. Not surprisingly, our pricing factor collapsed (Chart 1), reflecting market fears of a recession. The slowdown in growth was also confirmed by our own macro indicator (Chart 2), which declined.

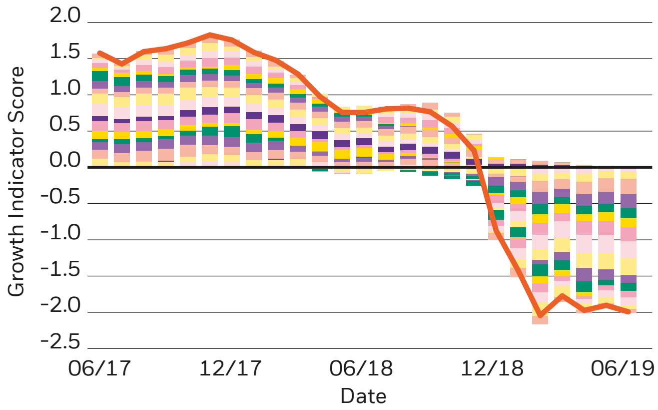
In other words: both the macroeconomic fundamentals and market pricing were negative, but as investors, we needed to be able to distinguish whether the magnitude of one was more extreme than the other. In this case, the macroeconomic data was negative, but it appeared the market was over-reacting. This is reflected by *What's Priced*, as shown in Chart 3. A positive score suggests that markets are underpricing growth, creating a buy opportunity for stocks (or in this case, were overly pessimistic about the deceleration of growth.) By January 2019, *What's Priced* was pointing positive, as shown in Chart 3. By the end of March, the S&P 500 had rallied 15% (Chart 4).

Chart 1: Growth Pricing Factor collapses in December 2018 (Pricing Factor)



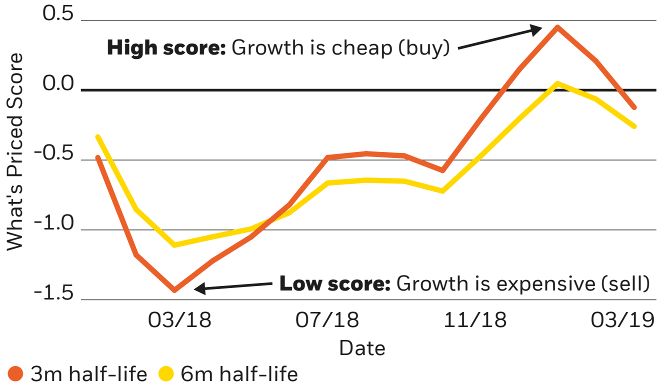
Source: BlackRock, Bloomberg Professional Services as of 03/01/2019.

Chart 2: Growth Macro Indicator declines in December 2018 (Macro Indicator)



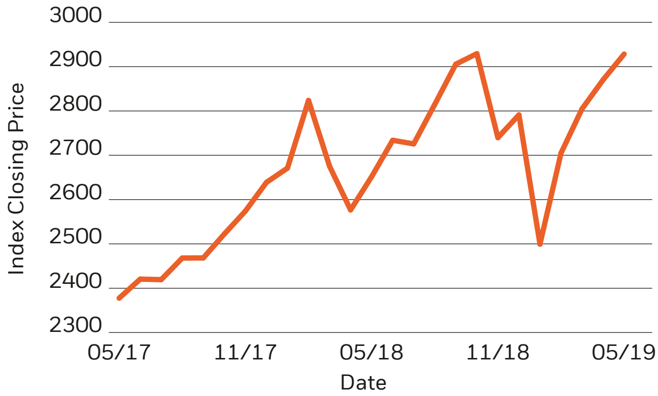
Source: BlackRock, Bloomberg Professional Services as of 06/01/2019. Different colors represent the various sub-indicators. Additional detail is available upon request.

Chart 3: *What's Priced* shows the pricing indicator over-reacted relative to the macro



Source: BlackRock, Bloomberg Professional Services as of 03/01/2019.

Chart 4: S&P 500 rallies 15% in Q1 '19



Source: BlackRock, Bloomberg Professional Services as of 05/01/2019.

To calculate the *What's Priced* score, we use the residual. This is the difference between the realized value we are trying to predict and what the regression has predicted. In our case, the model is trying to explain market pricing using macro fundamentals. Since we are looking for disconnects between market pricing and macro fundamentals, or the extent to which market pricing is not explained by our macro fundamental, we use the residual. The score is the inverse of that residual–for example, a high positive growth score would suggest that markets are underpricing growth. This case study is shown for illustrative purposes only, and was selected to demonstrate BlackRock's capabilities with respect to *What's Priced*. There is no guarantee than an actual strategy will be executed or executed as shown above, or that if executed, will be profitable. This case study does not predict future results, even if a similar strategy is used.

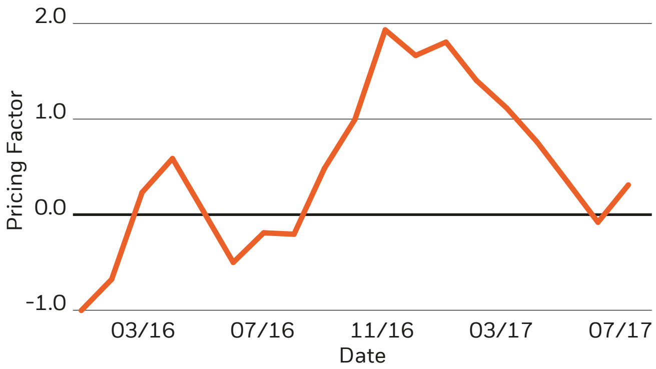
Case study 2

The Inflation 'Trump-et'

Donald Trump's election win in November 2016 led to a lot of optimism around tax cuts, deregulation and infrastructure spending, based on Trump's campaign promises and Republican control of Congress. In addition, a strong labor market and low unemployment resulted in anticipations of wage growth. As a result, the market expected a significant increase in inflation–as seen in the pricing factor (Chart 5) and 10-year breakevens inflation rates (Chart 8), which rose as high as 2.1% in February 2017. Our macro indicator (Chart 6), which uses a composite of survey-based measures of inflation, showed that inflation expectations were high, but not as outsized as the market implied. President Trump was unable to deliver on all his campaign promises: the infrastructure plan, for one, was relegated to a back seat after the administration's failed attempt to repeal the Affordable Care Act.

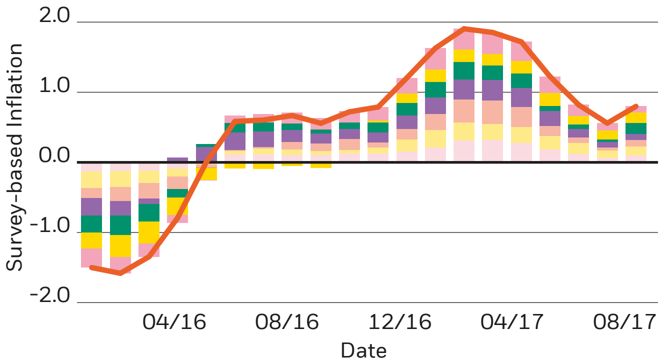
Despite the strength of the labor market, U.S. inflation in the first half of 2017 proved to be weak. This was in part a result of the sharp fall in wireless costs due to pricing plans, as well as moderations in key categories such as housing. Macro fundamentals were soft, while expectations were overly exuberant. As shown in Chart 7, *What's Priced* showed an extreme negative score towards the end of 2016 and at the beginning of 2017, presenting an opportunity to underweight breakevens as the market was over-enthusiastic in its pricing of rising inflation. Indeed, Chart 8 shows how 10-year breakevens peaked around February 2017 declining from a high of 2.1% to 1.8% by July 2017.

Chart 5: Trump's election leads to inflation exuberance (Pricing Factor)



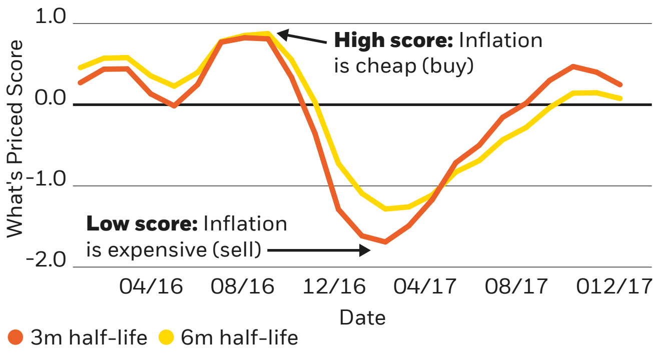
Source: BlackRock, Bloomberg Professional Services as of 07/01/2017.

Chart 6: Survey-based inflation appeared optimistic (Macro Indicator)



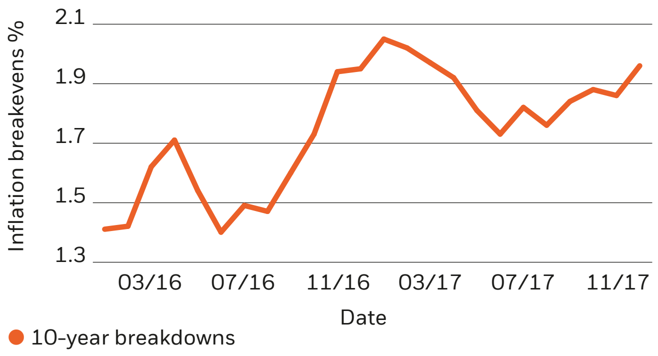
Source: BlackRock, Bloomberg Professional Services as of 08/01/2017. Different colors represent the various sub-indicators. Additional detail is available upon request.

Chart 7: *What's Priced* showed market pricing was more aggressive than the macro



Source: BlackRock, Bloomberg Professional Services as of 12/01/2017.

Chart 8: Inflation breakevens declined from February until July '17



Source: BlackRock, Bloomberg Professional Services as of 12/29/2017.

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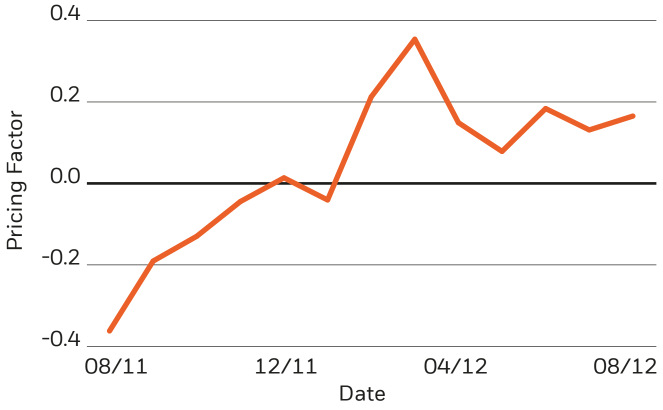
Case study 3

Operation Twist

Operation Twist, announced in September 2011 and inspired by a policy used in 1961, was a policy initiated by the Fed to make financial conditions more accommodative. The intention was to sell short-term Treasuries in exchange for buying the same amount of longer-term bonds. However, 10-year Treasury yields initially rose as the market had expected a more dovish policy response from the Fed. The pricing factor (Chart 9) further illustrates the market's disappointment with what was believed to be a less dovish stance. Our macro indicator monitors central bank speeches. Terms such as 'weak', 'accommodative' or 'ease' will indicate that the central bank is being more dovish. In this example, the indicator (Chart 10) showed that the Fed was being dovish in their policy announcement, as the central bank attempted to support lending.

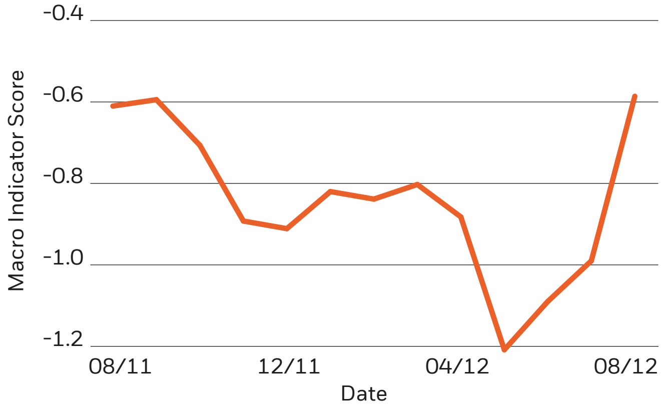
As shown below, the *What's Priced* score (Chart 11) started to decline rapidly in August 2011, bottoming in October 2011. A negative score implies markets underpricing dovish policy (in this case, the Fed's dovish shift as part of Operation Twist), presenting a buying opportunity for Treasuries. Indeed, 10-year U.S. Treasury yields declined (Chart 12) from 2.7% to 1.5% between late 2011 and mid-2012. In fact, by June 2012, the 10-year Treasury had fallen to 200-year lows.

Chart 9: Market disappointment that the Fed wasn't as dovish as hoped (Pricing Factor)



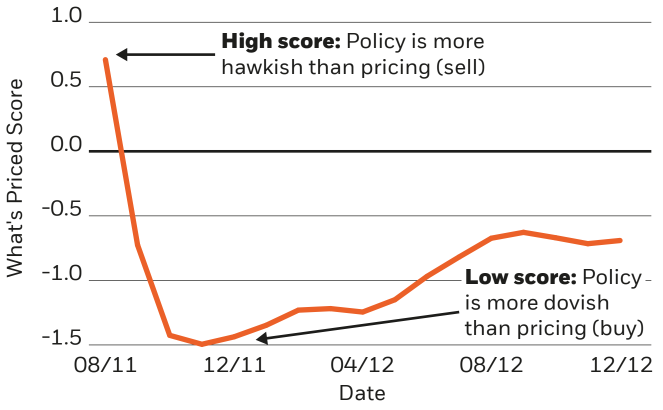
Source: BlackRock, Bloomberg Professional Services as of 08/01/2012.

Chart 10: Central Bank speeches continued to be dovish (Macro Indicator)



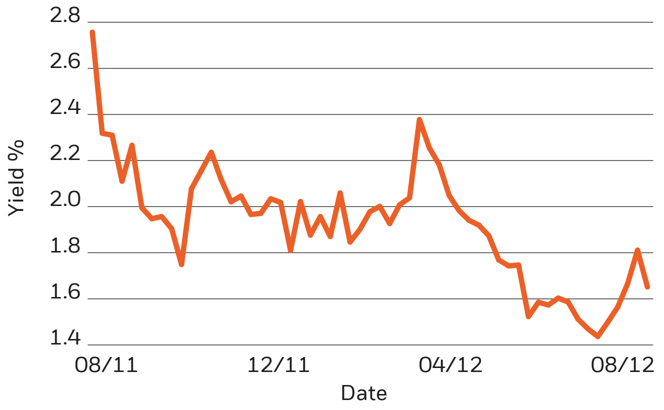
Source: BlackRock, Bloomberg Professional Services as of 08/01/2012.

Chart 11: *What's Priced* declined as the Fed stayed dovish despite market expectations



Source: BlackRock, Bloomberg Professional Services as of 12/01/2012.

Chart 12: U.S. 10-year Treasury yields declined after Operation Twist was announced



Source: BlackRock, Bloomberg Professional Services as of 08/27/2012.

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Conclusion

The *What's Priced* framework is the result of our multi-asset platform's focus on innovation and represents a rigorous way to measure the disconnect between market pricing and macroeconomic fundamentals. Quantifying this relationship is crucial, as it allows an investor to clearly identify when the market is either pricing a macro fundamental differently to one's own opinion or whether it is being driven by some other factor.

There is no guarantee that the *What's Priced* framework will always point to trading opportunities, as there may be times where the disconnects are warranted, or are reflecting something not in our own estimates. The use of the tool needs to be married with an understanding of what may be driving market pricing and how this may or may not be different to history.

Nevertheless, we illustrated the power of the *What's Priced* tool using three case studies across Growth, Inflation and Policy. In 2018, markets sold off against a declining growth backdrop, but sold off beyond what was reflected in the data. This presented a buying opportunity in equities. In 2016, Donald Trump's election, given his campaign promises, led market participants to believe an inflationary backdrop would ensue. However, not all of those campaign promises became a reality, thus, providing an opportunity to trade inflation breakevens. In 2011, the launch of Operation Twist was initially met with disappointment by the market despite central bank language remaining dovish. This ultimately provided an opportunity to invest in U.S. Treasuries. In all these cases, the framework allowed us to take a more balanced view of what was happening in markets and make more informed decisions in our portfolios.

We rely on a wide breadth of inputs and techniques to build *What's Priced*, and strive to continuously refine and improve the framework. For example, while the current framework relies heavily on understanding the macroeconomic environment and its impact on the market, we recognize that there are other factors which can affect the market as well. As multi-asset investors, the need to monitor an ever expanding opportunity set is of paramount importance in order to improve the chances of success. Incorporating new insights into the *What's Priced* tool will allow us to develop even more robust views in the future.

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