THE INVERTED YIELD CURVE: IS THERE A SIGNAL IN THE NOISE?
Over the last few weeks, as markets have gyrated, explanations of day-to-day swings have shifted and morphed, often in contradictory ways, but few of them have had staying power.

On Tuesday (December 4), as the Dow dropped 800 points, following a 300-point up day on Monday, the experts found a new reason for the market drop, in the yield curve, with an "inverted yield curve", or at least a portion of one, predicting an imminent recession.

As with all market rules of thumb, there is some basis for the rule, but there are shades of gray that can be seen only by looking at all of the data.
Yield Curves over time
Yield Curve on December 4, 2018

The Inversion Blip: 5 year rate is lower than 2 or 3 year rate.
Yield Curve: A Rationale for Upward Sloping Curves

- To understand yield curves, let's start with a simple economic proposition. Embedded in every treasury rate are expectations of expected inflation and expected real interest rates, and the latter
  - Interest Rate = Expected Inflation Rate + Expected Real Interest Rate

- Over much of the last century, the US treasury yield curve has been upward sloping, and the standard economic rationalization for it is a simple one. In a market where expectations of inflation are similar for the short term and the long term, investors will demand a "maturity premium" (or a higher real interest rate) for buying longer term bonds, thus causing the upward tilt in the yield curve.
And the mechanics of downward sloping curves
The rises in short term rates that give rise to each of the inverted yield curve episodes are accompanied by increases in the Fed Funds rate.

To the extent that the Fed's monetary policy action (of raising the Fed funds rate) accomplishes its objective of slowing down growth, the yield slope metric becomes a stand-in for the Fed effect on the economy, with a more positive slope associated with easier monetary policy.
Inverted Yield Curves: The Perfect Predictor of Recessions?

The term spread and recessions

Note: Gray bars indicate NBER recession dates.
Yield Curves and Economic Growth: A fuller analysis?

- The fact that every inversion in the last few decades has been followed by a recession will strike fear into the hearts of investors, but is it that fool proof a predictor?

- Perhaps, but given that the yield curve slope metrics and economic growth are continuous, not discrete, variables, a more complete assessment of the yield curve's predictive power for the economy would require that we look at the strength of the link between the slope of the yield curve (and not just whether it is inverted or not) and the level of economic growth (and not just whether it is positive or negative).
US treasury rates over time
Yield spreads over time


Yield spreads move together, with both short term and long term spreads widening in the same periods, narrowing in others, and turning negative in some.
Yield Spreads and GDP Growth
Looking past the picture..

<table>
<thead>
<tr>
<th></th>
<th>1 yr vs 3 mth</th>
<th>2 yr vs 1 yr</th>
<th>5 yr vs 2 yr</th>
<th>10 yr vs 2 yr</th>
<th>10 yr vs 3 mth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP Growth in next quarter</td>
<td>0.0821</td>
<td>0.0884</td>
<td>-0.1176</td>
<td>-0.1554</td>
<td>-0.1884</td>
</tr>
<tr>
<td>Real GDP Growth in next year</td>
<td>0.1577</td>
<td>0.2897</td>
<td>0.0432</td>
<td>-0.0147</td>
<td>-0.0839</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2008 through 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real GDP Growth in next quarter</td>
<td>-0.4939</td>
</tr>
<tr>
<td>Real GDP Growth in next year</td>
<td>-0.5332</td>
</tr>
</tbody>
</table>

The sign on the correlation measures how GDP growth is linked to the slope of the yield curve; a positive correlation is supportive of the base hypothesis, which is that flatter or more negatively sloped are associated with lower or negative economic growth. The strength of the relationship is captured in the how close the correlation number is to one.
What I see...

- **It is the short end that has predictive power for the economy:** Over the entire time period (1962-2018), the slope of the short end of the yield curve is positively related with economic growth, with more upward sloping yield curves connected to higher economic growth in subsequent time periods.

- **Even that predictive power is muted:** Over the entire time period, even for the most strongly linked metric (which is the 2 year versus 1 year), the correlation is only 29%, for GDP growth over the next year, suggesting that there is significant noise in the prediction.

- **And 2008 may have been a structural break:** Looking only at the last ten years, the relationship seems to have reversed sign, with flatter yield curves, even at the short end, associated with higher real growth. This may be a hangover from the slow economic growth in the years after the crisis, but it does raise red flags about using this indicator today.
Investor Perspectives

- As investors, your focus is often less on the economy, and more on stock prices.
- After all, strong economies don't always deliver superior stock returns, and weak ones can often be accompanied by strong market performance.
- From that perspective, the question becomes what the slope of the yield curve and inverted yield curves tell you about future stock returns, not economic growth.
Yield Curve Spreads and Stock Returns

![Chart showing yield spreads versus future stock returns from 1962 to 2018. The chart illustrates the relationship between short-term and long-term interest rates and their impact on stock market returns.](chart_image)
And correlations

<table>
<thead>
<tr>
<th>Stock Return next quarter</th>
<th>1 yr vs 3 mth</th>
<th>2 yr vs 1 yr</th>
<th>5 yr vs 2 yr</th>
<th>10 yr vs 2 yr</th>
<th>10 yr vs 3 mth</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.0081</td>
<td>0.0669</td>
<td>0.0161</td>
<td>0.0483</td>
<td>0.0834</td>
</tr>
<tr>
<td>Stock Return in next year</td>
<td>0.1869</td>
<td>0.1580</td>
<td>0.0285</td>
<td>0.0370</td>
<td>0.0441</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Correlation: 2008 to 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stock Return next quarter</td>
</tr>
<tr>
<td>Stock Return in next year</td>
</tr>
</tbody>
</table>
Mistake 1: One is to take a blip on a day (the inversion in the 2 and 5 year bonds on December 4) and read too much into it, as we are apt to do when we are confused or scared. It is true that a portion of the yield curve inverted, but if history is any guide, its predictive power for the economy is weak and for the market, even weaker.

Mistake 2: The other is that we are taking rules of thumb developed in the US in the last century and assuming that they still work in a vastly different economic environment.
**Bottom Line**

- **Yield curve flattening is good news:** In my view, the flattening of the yield curve in the last two years has been more good news than bad, an indication that we are coming out of the low growth mindset of the post-2008 crisis years.

- **But the stalling at 3% is sobering news:** I also think that the stalling of the US 10-year treasury bond rate at 3% or less is a warning that investors are scaling back growth expectations for both the global and US economies, going into 2019.

- **The key tests for stocks lie in whether they can not only sustain earnings growth,** in the face of slower economic growth and without the tailwind of a tax cut (like they did last year), but also in **whether they can continue to return cash** at the rates that they have for the last few years.