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RESEARCH NOTE - THE YIELD CURVE

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July 2019



OVERVIEW

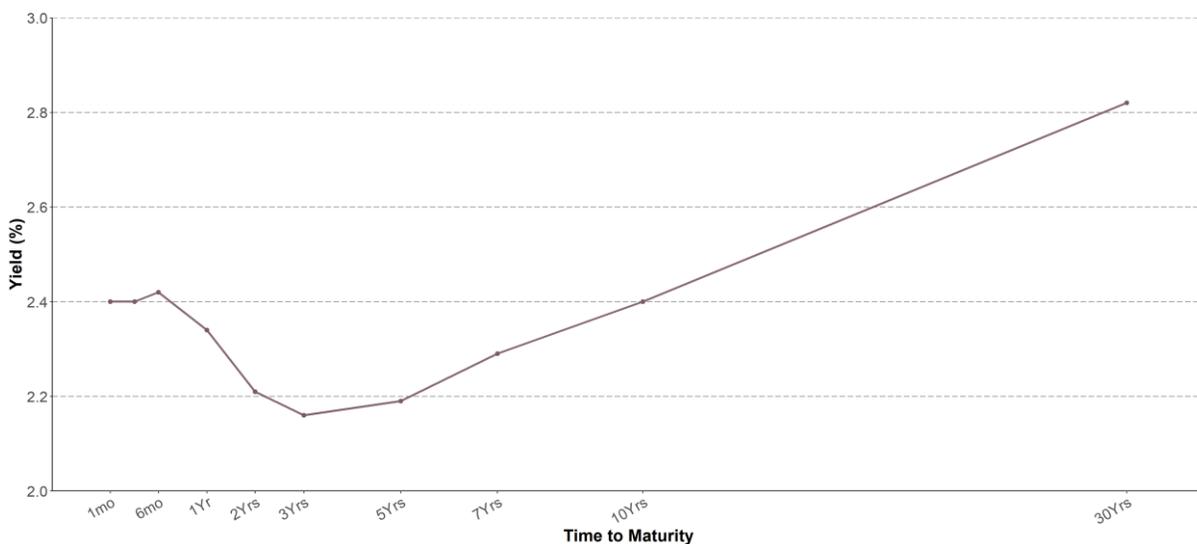
The Treasury yield curve provides information regarding the market’s expectations of future economic activity. Recently, the yield curve turned from flat to inverted,¹ which may signal that the market expects a recession to occur over the short to medium term. However, this is not necessarily a surprise for investors, as the U.S. economy has been experiencing “late cycle” dynamics.

While it is worth paying attention to the behavior of economic variables such as the yield curve, they are most informative at extreme readings rather than at temporary inversions for specific points along the curve. Hence, investors should exercise care when trying to make definitive conclusions, or changes to their portfolios, based exclusively on this development.

THE YIELD CURVE

The yield curve, also known as the term structure of interest rates, is a graphical representation of the relationship between the yield to maturity, and time to maturity of bonds of the same issuer/asset class, and same credit quality. This is commonly represented as a line chart with times to maturity on the x-axis and yields to maturity on the y-axis.

Chart 1. U.S. Treasury Yield Curve²
May 31, 2019



The yield curve is a very useful tool for fixed income investors, because it provides information about the relationship between maturities and yields for similar bonds, which, in turn, can be used to price these instruments. Fixed income investors create yield curves for a variety of sectors, credit ratings and issuers, in order to better understand the risk and return expectations of different types of bonds. For example, a high yield bond manager may look at

¹ Yields for shorter-term maturity are higher than for longer-term maturities.

² Source: FRED, MIG.



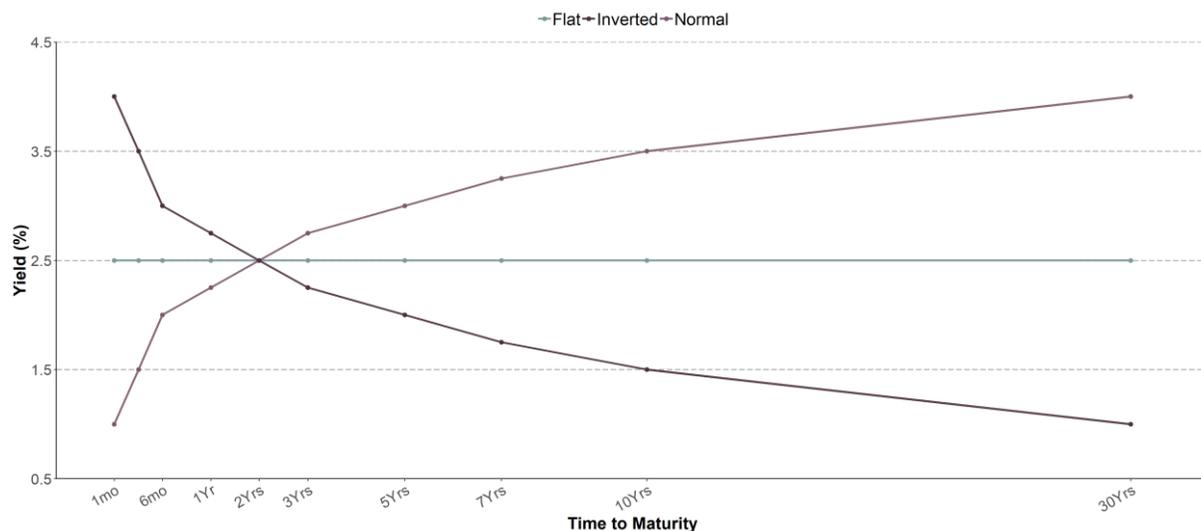
the comparison between the yield curve of a specific issuer relative to the yield curve of the broad industry or similarly rated asset class.

However, the most widely used yield curve for U.S. investors³ (not necessarily fixed income only investors) is the Treasury yield curve. This curve plots the relationship between yield to maturity and time to maturity of bonds issued by the U.S. government. This yield curve is important because Treasuries are considered virtually “risk-free” instruments, so its yield curve provides a pure comparison (i.e., no credit risk) of interest rates/yields at different maturities, which, as we will see ahead, provides information about the market’s expectations of future economic activity.

THE SHAPE OF THE YIELD CURVE

While the yield curve can theoretically assume any shape or slope, its “normal” state is upward sloping, meaning yields increase with maturity. However, sometimes the yield curve can be flat or even inverted, but these states tend to not last long.

Chart 2. Stylized Yield Curve Shapes (Example)



The shape of the yield curve (i.e., its slope) is determined by two main factors: market expectations of future interest rates, and a risk premium that investors require for holding long-term bonds.⁴ Economists have developed three main theories, or frameworks, that describe this relationship:

³ Treasury Yield Curves of their respective governments may be more applicable for international investors (e.g., Japanese Government Bonds yield curve for Japanese investors). From this point onward, the term “yield curve” will reference the U.S. Treasury yield curve, as yield curves of other assets or countries escape the breadth of this paper.

⁴ For yield curves of non-Treasury instruments, credit risk becomes an important third factor that influences the shape of its respective yield curve.



- Pure Expectations Theory: asserts that long-term rates exclusively reflect investors' expectations of future short-term interest rates. Within this framework, an upward (downward) sloping yield curve would imply investors expect increasing (decreasing) short-term interest rates.
- Liquidity Preference Theory: derived from the Pure Expectations Theory, maintains that in addition to expectations of future interest rates, the yield curve also reflects a term premium, or liquidity premium, that investors require for holding long-term bonds. The existence of this premium is the main explanation for why yields for long-term bonds tend to be higher than those for short-term bonds.
- Preferred Habitat Theory: similar to the liquidity preference theory, preferred habitat states that, in addition to expectations of future interest rates, the yield curve reflects an added risk premium required to compensate investors for holding bonds at different maturities. This theory suggests that investors tend to "prefer" short-term issues, so they demand a premium for moving away from their preferences in order to hold long-term bonds.

THE YIELD CURVE AND ECONOMIC ACTIVITY

The presence of multiple factors influencing the shape of the yield curve (e.g., future rate expectations, term premium, preferred habitat, etc.), makes it complicated for investors to fully interpret the yield curve. However, at a high level, the slope of the yield curve has historically been a good leading indicator of economic activity.⁵

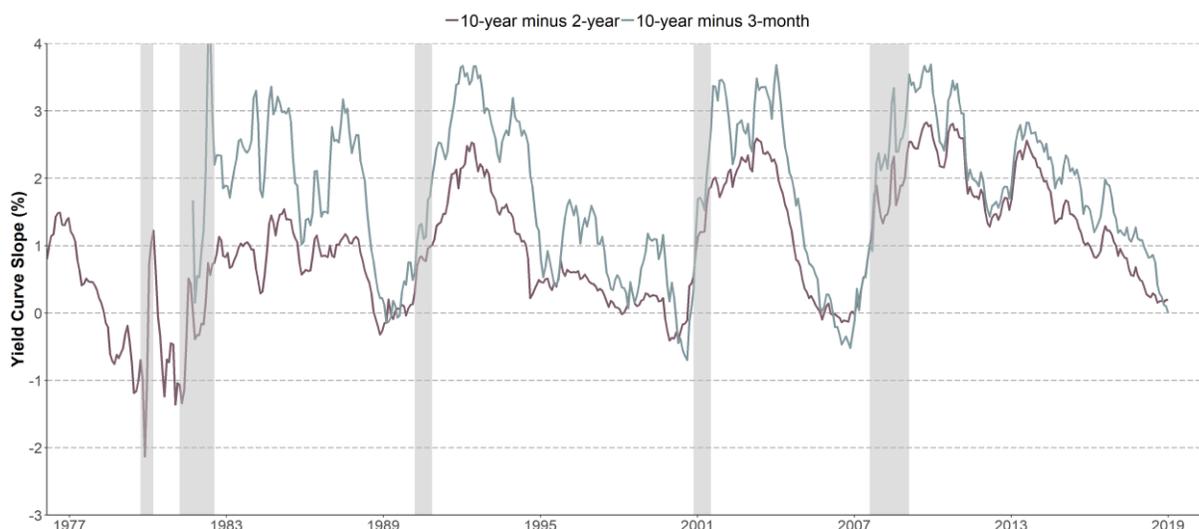
- Upward-Sloping or "Normal" curve: signals a normal economic environment with growth performing near expectations. With no major immediate changes expected in terms of inflation or interest rate movements, the term premium results in an upward-sloping curve.
- Steep curve (upward sloping): A very steep curve can be an indicator of economic upturn. This is based on the assumption that investors are expecting rates to rise significantly in the future as a response to high economic growth, and perhaps higher risk of inflation⁶.
- Flat curve: signals an economic slowdown or inflection period, one between an upward slope (economic upturn) and downward slope (recession).
- Inverted curve (downward sloping): reflects market expectations of rates dropping in the future consistent with an economic slowdown. Economists have historically used inverted yield curves as a predictor of recessions in the U.S.

⁵ It is worth noting that as any economic indicator, the yield curve is a good, but not perfect indicator, and that more information can be drawn from extreme readings (e.g., inverted curves, steep curves, etc.), than from more "normal" shapes.

⁶ Traditional monetary policy dictates rising rates to counter the negative effects of inflation.



Chart 3. Yield Curve Slope⁷
Monthly: June 1976 - May 2019



The chart above shows two commonly used metrics to measure the slope of the yield curve that allow for easier historical comparison. The “Ten minus Two” measure, or the difference between the yield of a ten-year Treasury bond and a two-year Treasury note, is the most widely used metric to describe the slope of the yield curve. When the metric is positive (negative), it signals an upward (downward) sloping yield curve.

Throughout history, the “Ten minus Two” spread has correctly predicted all recessions in the U.S., that is, the metric has gone negative ahead of all recessions in the sample. However, this leading indicator is not completely accurate, as the signal has “led” a recession with varying period lengths, ranging from several weeks, to several months. Additionally, the signal has tended to go positive ahead of economic upturns (even during recessions), correctly predicting (at a high level) positive economic environments.

CURRENT ENVIRONMENT **AS OF JUNE 2019**

Over the past twelve months, we have observed a “flat” yield curve, with the spread between 10-year and 2-year Treasury yields hovering around 25 basis points, well below its historical average of approximately 95 basis points. This flattening of the curve coincides with market expectations of a slowing economy in the U.S., with decreasing growth prospects over the near term. However, while the curve has been flattening, it still has not “inverted” from the Ten minus Two perspective.

However, when looking at the 10-year minus 3-month spread, the flattening of the curve turned briefly into an inversion in late March 2019, and once again toward the end of May, this time remaining inverted for a couple of weeks, including as of the time of this writing.

⁷ Source: FRED, MIG.



Chart 4. Yield Curve Slope⁸
Daily: June 1, 2018 – May 31, 2019



While a curve inversion at any level should be cause for concern, the signal itself has not revealed any “new” information to the market. As was previously discussed, curve inversions signal economic slowdowns and recessions, yet in the case of the U.S., it is well established that the economy is experiencing “late cycle” dynamics, including flat yield curves, lowering growth prospects, and the Federal Reserve “pausing” its rate hiking cycle.⁹ Considering all this, it is not surprising that the U.S. Treasury market expects a recession in the short to medium term.

Additionally, from a technical perspective, it would be prudent to wait for *both* the Ten minus Two and the Ten minus Three-month series to show curve inversions as a confirmation signal. Furthermore, the inversion should last for more than just a few days; a couple of months to a quarter would provide a stronger signal, as temporary inversions can be caused by spurious market dynamics, especially in the current environment of low interest rates. Even if all of this occurs, the signal will still give no certainty regarding the timing of a recession, as throughout history, it has predicted recessions without a consistent leading periods.

Finally, from an institutional investor’s perspective, while it is important to pay attention to economic signals, including the shape of the yield curve, economic variables are usually slow-moving and prone to corrections, so only the most extreme scenarios (a small yield curve inversion not being one of them) would warrant changes to an asset allocation. Meketa works with clients to develop a strategic asset allocation that results in a portfolio that can withstand the dynamics of different economic cycles while providing the best opportunity to achieve its objectives.

⁸ Source: FRED, MIG.

⁹ <https://www.federalreserve.gov/newsevents/pressreleases/monetary20190619a.htm>

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