



**KENNESAW STATE
UNIVERSITY**

COLES COLLEGE OF BUSINESS
*Bagwell Center for the Study of Markets
and Economic Opportunity*

Commentary

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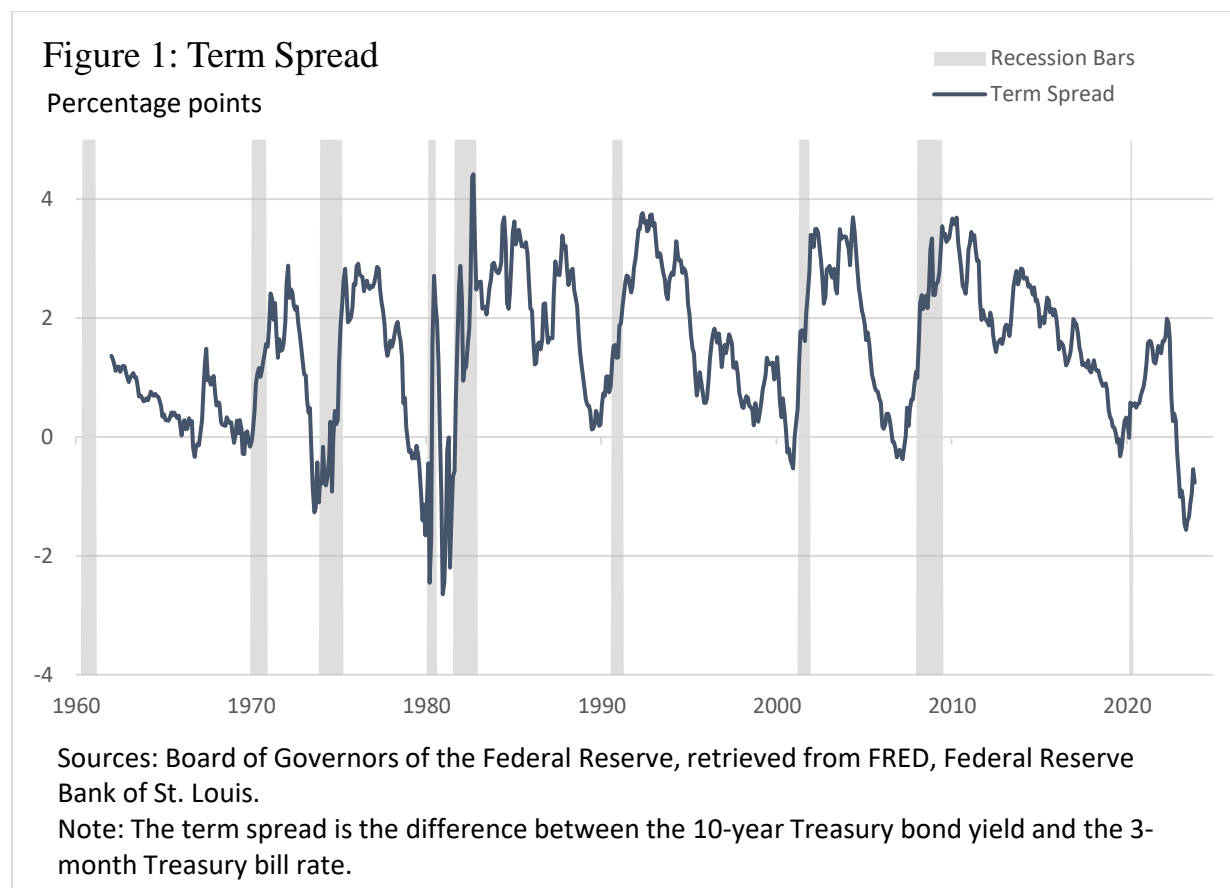
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The term spread – the difference between long- and short-term interest rates – has historically been a good predictor of recessions. In this commentary, I explore the idea that its predictive ability has diminished after the introduction of quantitative easing (QE) in 2008. Specifically, term spread may currently *overestimate* the probability that the economy will soon be in recession.

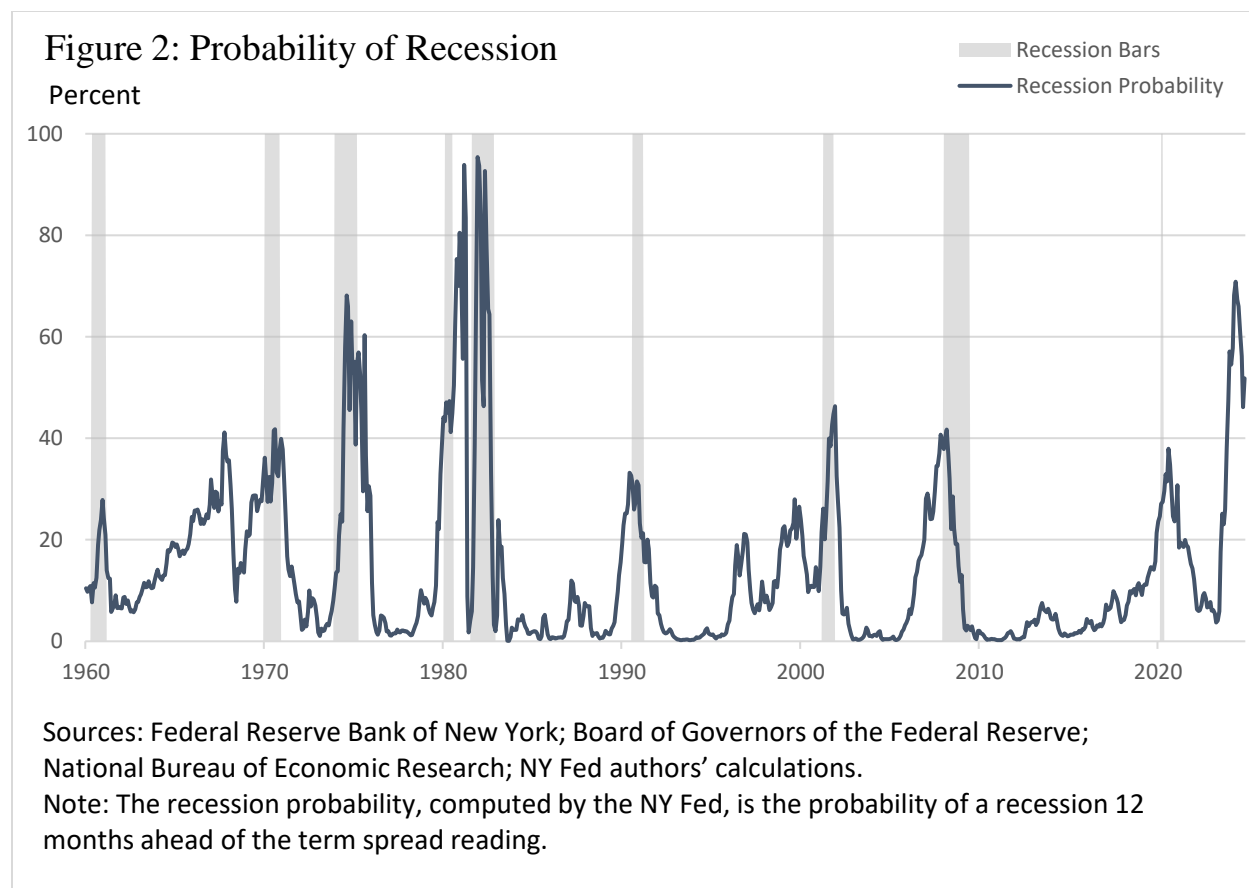
The term spread and the probability of recession

Long-term interest rates tend to be higher than short-term rates, so the term spread (a.k.a., the slope of the yield curve) tends to be positive. When the term spread becomes negative, we say that the yield curve becomes inverted, and an economic recession often follows within a year or so. Figure 1 plots the term spread between the 10-year Treasury bond rate and the 3-month Treasury bill rate. The vertical bars indicate recessions as identified by the NBER. The figure confirms that recessions tend to follow soon after the term spread becomes negative.



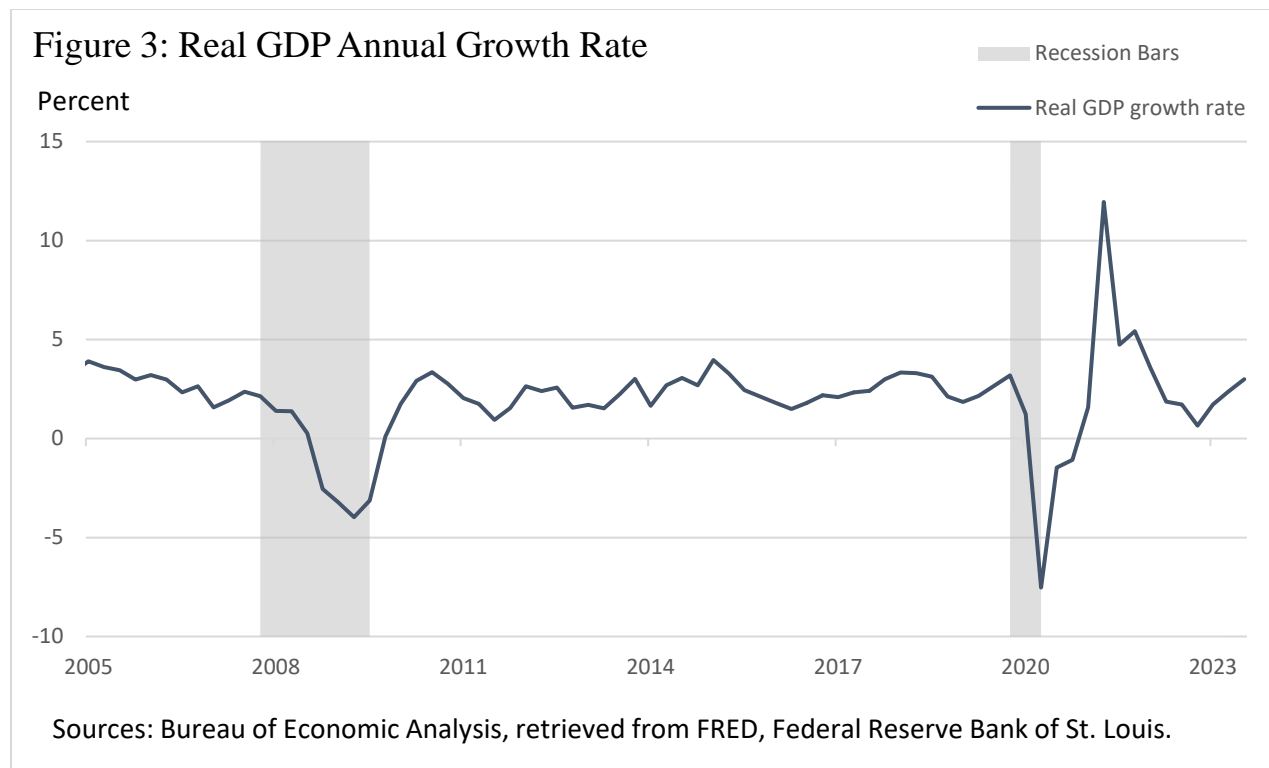
More generally, Figure 1 shows that recessions tend to follow periods when the term spread is low or close to zero. In other words, the economy's probability of entering a recession is higher when the term spread is low. Thus, economists can use the term spread to calculate the probability of a forthcoming recession. For instance, the Federal Reserve Bank of New York uses the term spread and a Probit model to estimate the probability that the economy will be in recession in a

year.¹ Figure 2 plots the recession probability computed by the NY Fed and the vertical bars that indicate recessions. The figure shows that the recession probability is high during recessions and low during expansions, confirming that the term spread helps predict economic activity one year ahead.



Although the term spread helped predict recessions in the past, it seems to be giving a wrong signal recently, overstating the recession probability. The term spread was negative at the beginning of 2023 (Figure 1), implying that the probability that the economy will be in recession at the beginning of 2024 is higher than 50 percent (Figure 2). Meanwhile, other economic indicators suggest that the economy is far from entering a recession. Most recently, real GDP has grown at a robust 3 percent annual rate, faster than trend growth (Figure 3).

¹ Federal Reserve Bank of New York, *The Yield Curve as a Leading Indicator* (https://www.newyorkfed.org/research/capital_markets/ycfaq.html).



Is the term spread overstating the recession probability? To answer this question, we need to understand why the term spread helps predict recessions.

The term spread, QE, and the stance of monetary policy

One important reason the term spread helps predict recessions is that it measures the stance of monetary policy. Think of the long-term rate as determined by long-run factors, such as the inflation rate and the real interest rate in the long run, while the short-term rate is determined by monetary policy. When the term spread is positive, the short-term rate is below the long-term rate, indicating that monetary policy is accommodative, eases financial conditions, and lowers the recession probability. In contrast, when the term spread is close to zero, the short-term rate is close to the long-term rate, suggesting that monetary policy is restrictive, tightens financial conditions, and raises the recession probability.

Although the term spread used to be a good measure of the stance of monetary policy before 2008, things changed in 2008 when the Fed began purchasing long-term assets under QE programs.² Figure 4 plots the securities held outright by the Federal Reserve, primarily the result of QE purchases. The figure shows the increase in securities held by the Fed due to the first three rounds of QE in 2008-2014 and the fourth round in 2020-2022.

² See my recent Bagwell Center working paper to learn how QE lowers interest rate spreads and stimulates investment and output. Filippo Occhino, 2023, "Quantitative Easing and Direct Lending in Response to the COVID-19 Crisis," The Bagwell Center for the Study of Markets and Economic Opportunity, Working Paper Series, Summer 2023, Kennesaw State University (<https://www.kennesaw.edu/coles/centers/markets-economic-opportunity/docs/quantitative-easing-and-direct-lending-in-response-to-the-covid-19-crisis.pdf>).

Figure 4: Federal Reserve Securities Held Outright

Trillions of U.S. Dollars



Sources: Board of Governors of the Federal Reserve, retrieved from FRED, Federal Reserve Bank of St. Louis.

Note: This series is the cumulative result of permanent open market operations: outright purchases or sales of securities, conducted by the Federal Reserve.

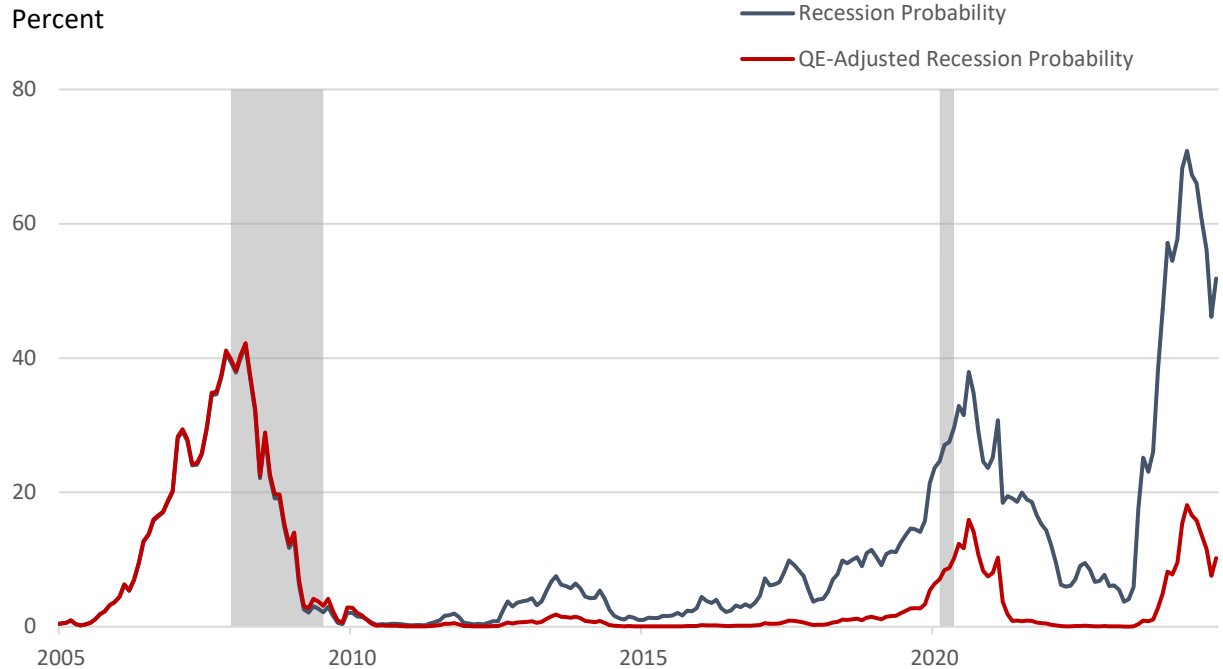
Unlike conventional monetary policy, QE eases financial conditions by lowering long-term rates, not short-term rates. Hence, the term spread does not capture the monetary accommodation provided by QE, thereby understating overall monetary policy accommodation and overstating the recession probability.

To illustrate how QE leads to lower recession probability estimates, I add QE as an explanatory variable in the Probit model of the NY Fed and compute a QE-adjusted recession probability. I measure QE using the ratio of securities held outright by the Federal Reserve to GDP and use plausible parameter values for the effects of QE.³ Figure 5 compares the recession probability computed by the NY Fed model and the recession probability adjusted for QE.⁴

³ There is considerable uncertainty and a wide range of estimates about the effects of QE. A plausible estimate is that QE purchases worth 10 percent of GDP (about \$1.5 trillion in 2008 or \$2 trillion in 2020) ease financial conditions as much as a one percentage point cut in the federal funds rate. I assume that federal funds rate cuts raise the term spread one for one, so QE purchases worth 10 percent of GDP lower the recession probability as much as a one percentage point increase in the term spread.

⁴ Other economists have pointed out that the term spread overstates the recession probability because of QE and have computed QE-adjusted probabilities of recession using different methods. Tomasz Wieladek, 2019, "Do Yield Curve Inversions Still Predict Recessions in the Age of QE?" T. Rowe Price Insights on Global Fixed Income (<https://www.troweprice.com/content/dam/trp-library/insights/pdfs/2019/november/Do-Yield-Curve-Inversions-Still-Predict-Recessions-in-the-Age-of-QE.pdf>). Johannes Gräß and Stephanie Titzck, 2020, "US Yield Curve Inversion and Financial Market Signals of Recession," ECB Economic Bulletin, Issue 1/2020 (https://www.ecb.europa.eu/pub/economic-bulletin/focus/2020/html/ecb.ebbox202001_02~20b7c9a04e.en.html).

Figure 5: Probability of Recession



Sources: Bureau of Economic Analysis; Federal Reserve Bank of New York; Board of Governors of the Federal Reserve; National Bureau of Economic Research; NY Fed authors' calculations; author's calculations.

Note: The recession probability, computed by the NY Fed, is the probability of a recession 12 months ahead of the term spread reading. The QE-adjusted recession probability is the same probability adjusted for the Fed's QE programs.

The figure shows that considering QE lowers the recession probability significantly. While the probability that the economy will be in recession at the beginning of 2024 is above 50 percent according to the NY Fed model, it is less than 10 percent according to the QE-adjusted model, more consistent with the recent robust real GDP growth. The QE-adjusted recession probability is less than 20 percent for all 2024.

In sum, the QE programs introduced since 2008 have eased financial conditions in a way not captured by the term spread. Hence, the term spread currently overstates the recession probability. Once QE is considered, the probability of a recession in 2024 is less than 20 percent, much lower than the estimate based only on the term spread and more consistent with the recent robust real GDP growth.