

**Problem Set 5. Interest Rates in Theory and Reality**  
**Due Tuesday, November 1, 11.59 pm.**

**Question 1. Liquidity-Preference Theory According to Keynes (This question has 2 parts.)**

Keynes lays out liquidity-preference theory in the context of a two-asset model in which agents hold some combination of cash and bonds.

1. Why does the liquidity-preference schedule have a negative slope instead of being a vertical line? That is, why does equilibrium in financial markets require a lower bond yield the greater the supply of portfolio cash?
2. Why is there a positive floor below which the bond yield cannot fall?

**Question 2. Liquidity-Preference Theory With an Interest-Bearing Safe and Liquid Asset (This question has 2 parts.)**

1. What difference does it make for liquidity-preference theory if short-term Treasury bills are available along with cash as an alternative to holding bonds?
2. How does the meaning of money change between the money-bonds model and the bills-bonds model?

**Question 3. Interest Rates Over Time (This question has 5 parts.)**

As Figure 1 shows, the spread between 10-year Treasuries (the green curve) and the T-bill rate (the blue curve) varied between a negative value in 2001 and 2007 and briefly in 2019 (yield inversion) to over 325 basis points (3.25 percentage points) in the spring of 2004. The spread between Moody's Index of Baa long-term corporate-bond yields (the red curve) and the T-bill rate is currently just over 300 basis points. In November of 2008 it was 900 basis points. In 2006, it was less than 100 basis points.

1. What causes the spread between the T-bill rate and the 10-year Treasury bond yield to vary over time? Why is the spread generally greater when interest rates are relatively low?
2. What causes the spread between the 10-year Treasury bond and corporate bonds to fluctuate over time? (For the purposes of this question, ignore the difference in the maturity of 10-year T-bonds and the maturity of corporate bonds.)
3. Why do yield inversions—the reversal of the customary relationship between the T-bill rate and the 10-year Treasury bond—take place, as in 2001, 2007 and 2019? Why are there so few yield inversions?

It is usually the case that the rates on short-term Treasury bills, Federal funds, and short-term high grade (AA) commercial paper are very close to one another—see Figures 2 and 3. In 2008 and early 2009 however, as Figure 4 shows, this was not the case.

4. What explains the fact that the three different short rates move together in Figures 2 and 3?
5. How do you explain the historical anomaly in Figure 4?

# Three Month T-Bill, Ten Year Note, and Moody's Baa Corporate Bond, 1962-2021

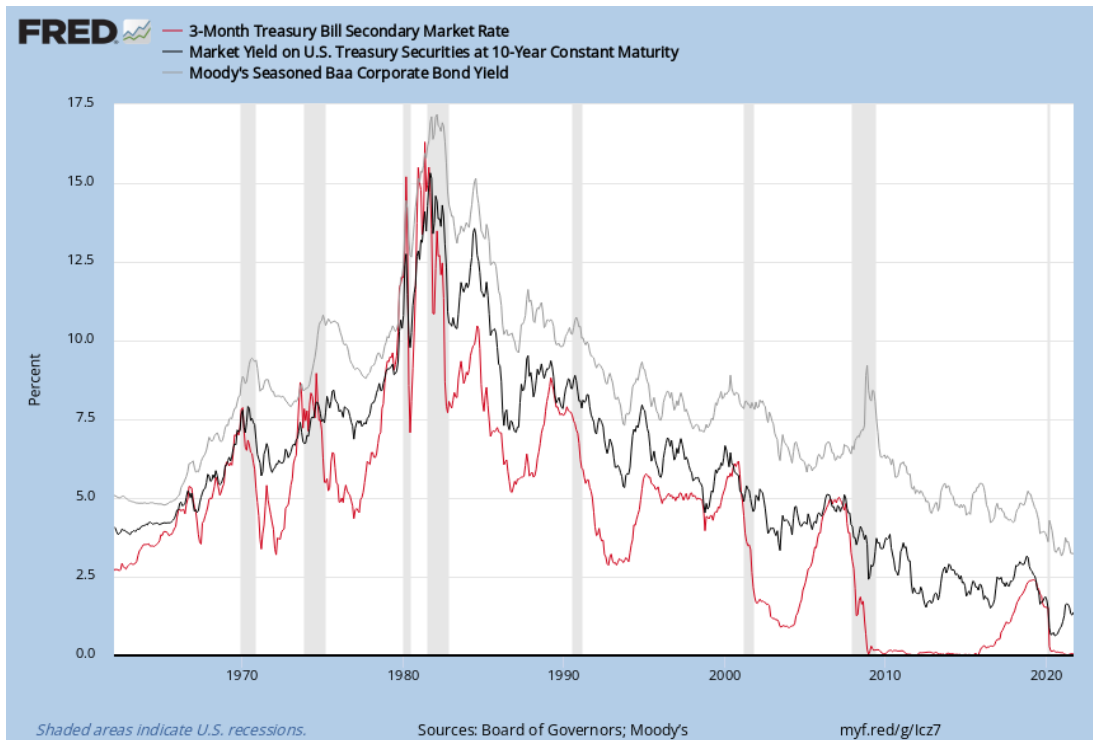


Figure 1

## Short-Term Rates, 1997-2020

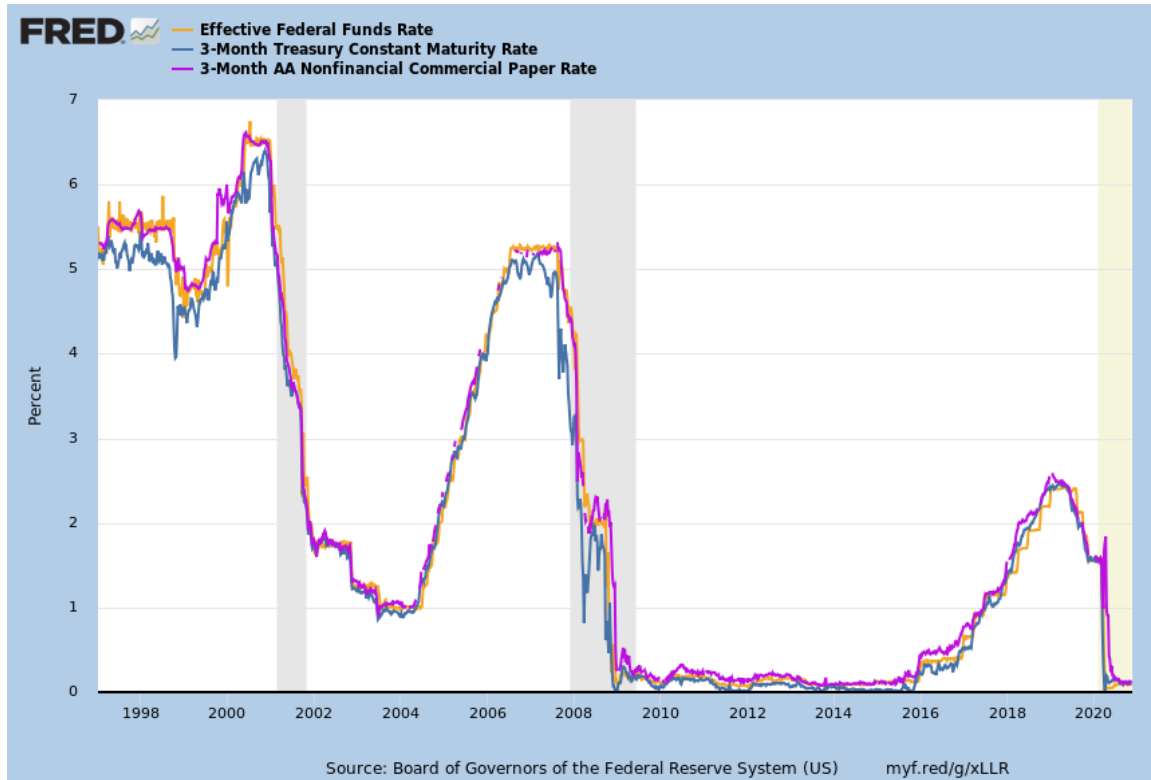


Figure 2

## Short-Term Rates in 2005

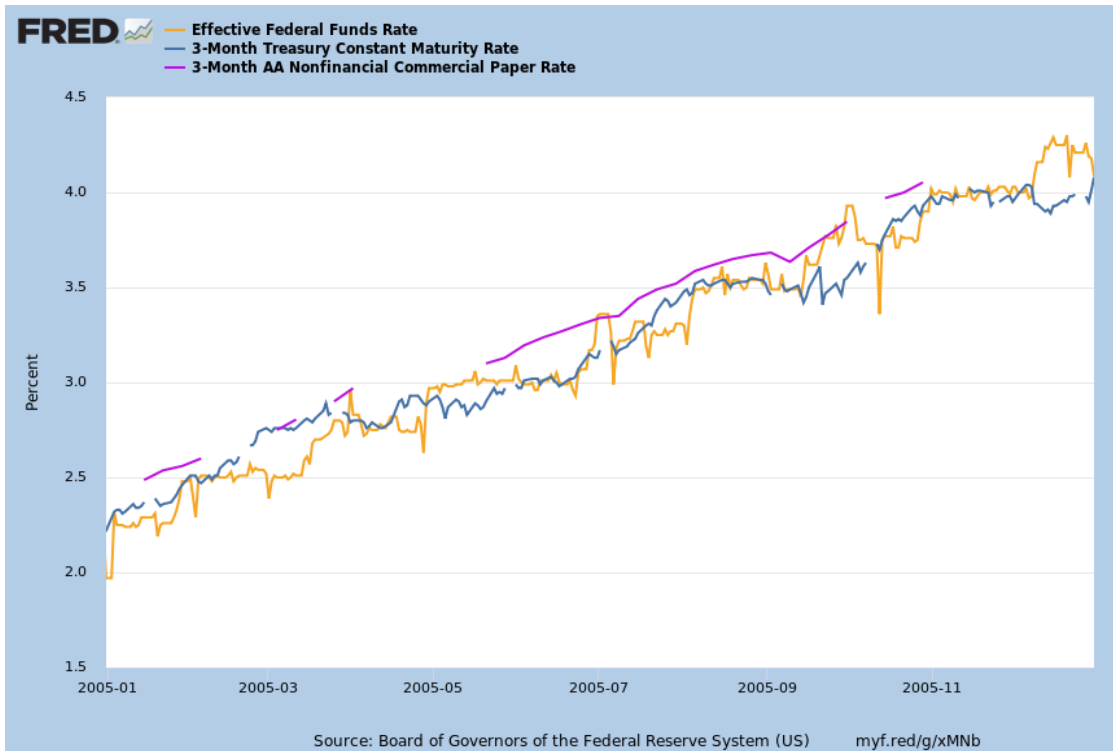


Figure 3

### Short-Term Rates During the Financial Crisis of 2008

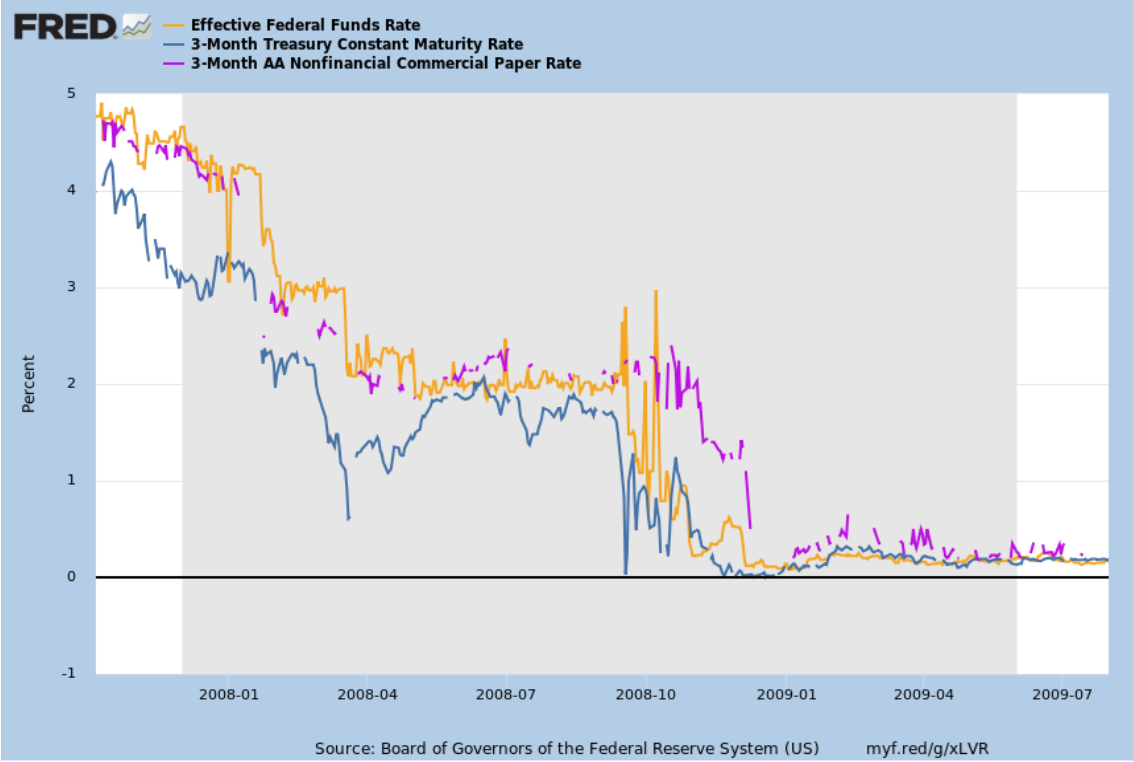


Figure 4