EE432 Monetary Theory and Policy

Lecture 3 Bond Price and Term Structure of Interest Rates

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Supplement

Bond Prices as Present Values

- Consider two types of bonds:

A **one-year bond**—a bond that *promises one payment of $100 in one year*. Price of the one-year bond:

$$\$P_{1t} = \frac{\$100}{1 + i_{1t}}$$

A **two-year bond**—a bond that *promises one payment of $100 in two years.* Price of the two-year bond:

$$\$P_{2t} = \frac{\$100}{(1 + i_{1t})(1 + i^{e}_{1t+1})}$$

In words, the **price of two-year bonds** is the ***present value*** of the payment in two years— **discounted** using *current* and *next year's expected one-year interest rate.*

Bond Prices and Bond Yields

- The **expectations hypothesis** states that ***investors care only about expected return.***
- If **two bonds offer the same expected one-year return**, then:

$$1 + i_{1t} = \frac{\$P^{e}_{1t+1}}{\$P_{2t}}$$

Return per dollar from ***holding a one-year bond*** **for one year.**	Expected return per dollar from ***holding a two-year bond*** **for one year**.

Bond Prices and Bond Yields

- The **yield to maturity on an *n-year* bond**, or the *n*-year interest rate, is the ***constant annual interest rate*** that makes the *bond price today* equal to the *present value of future payments of the bond.*

$$\$P_{2t} = \frac{\$100}{(1+i_{2t})^2}$$, then: $$\frac{\$100}{(1+i_{2t})^2} = \frac{\$100}{(1+i_{1t})(1+i^{e}_{1t+1})}$$

therefore: $$(1+i_{2t})^2 = (1+i_{1t})(1+i^{e}_{1t+1})$$

Bond Prices and Bond Yields

- The **yield to maturity** on a *two-year bond*, is closely approximated by:

$$i_{2t} \approx \frac{1}{2}(i_{1t} + i^{e}_{1t+1})$$

In words, *the* ***two-year interest rate*** *is (approximately) the* ***average of the current one-year interest rate*** *and* ***next year's expected one-year interest rate.***

Expectation Hypothesis implies that *the long-term interest rates reflect current and future expected short-term interest rates*.

The **interest rate on a long-term bond** will equal an ***average of*** the ***short-term interest rates that people expect to occur*** over the life of the long-term bond.

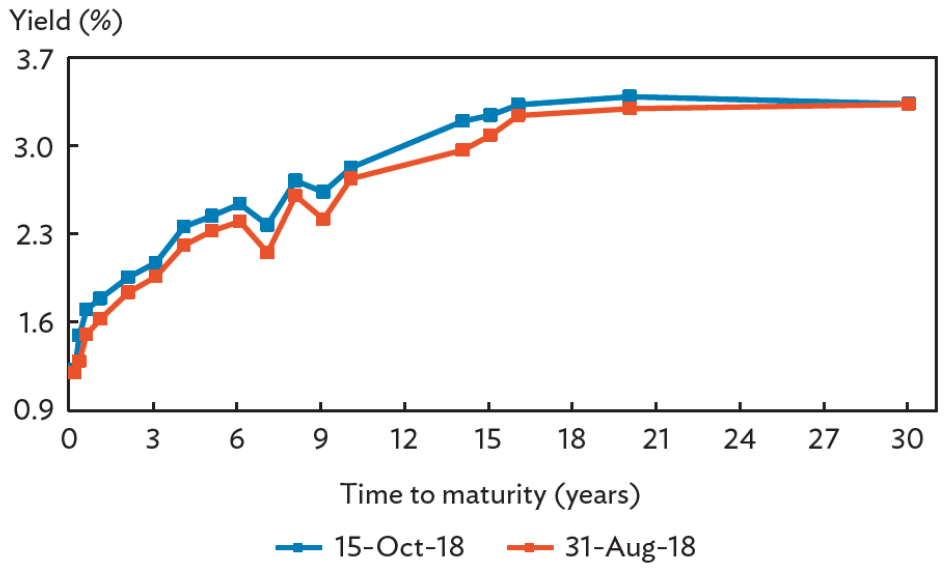
Bond Prices and Bond Yields

- An **upward sloping yield curve** means that ***long-term interest rates are higher than short-term interest rates.*** Financial markets *expect* ***short-term rates to be higher*** *in the future*.
- A **downward sloping yield curve** means that ***long-term interest rates are lower than short-term interest rates***. Financial markets expect ***short-term rates to be lower in the future***.
- Using the following equation, you can *find out* ***what financial markets expect*** *the 1-year interest rate to be 1 year from now:*

$$i^{e}_{1t+1} = 2i_{2t} - i_{1t}$$

Thailand Yield Curve Movements

Figure 1: Thailand's Benchmark Yield Curve—Local Currency Government Bonds



Sources: Based on data from Bloomberg LP and Thai Bond Market Association.

- **Yields rose** during the period ***on expectations that the Bank of Thailand (BOT) would soon increase its benchmark policy rate***.
- The *decision to hike rates* raises more on concerns that ***a prolonged low-interest-rate environment would pose risks to financial stability*** rather than on *pressures from rising interest rates among regional peers and in advanced economies*.

Thailand Yield Curve Movements

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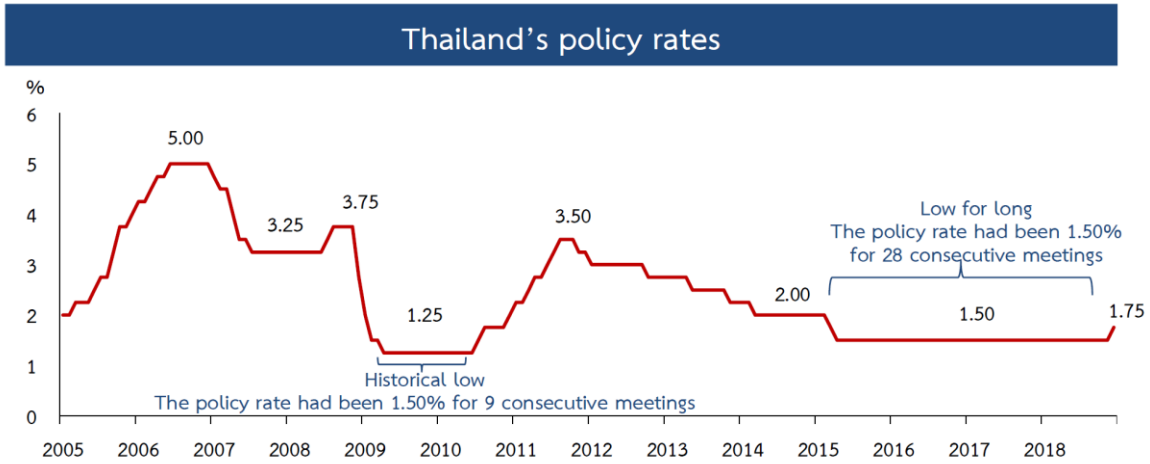
Policy rates remained at a low level for a prolonged period



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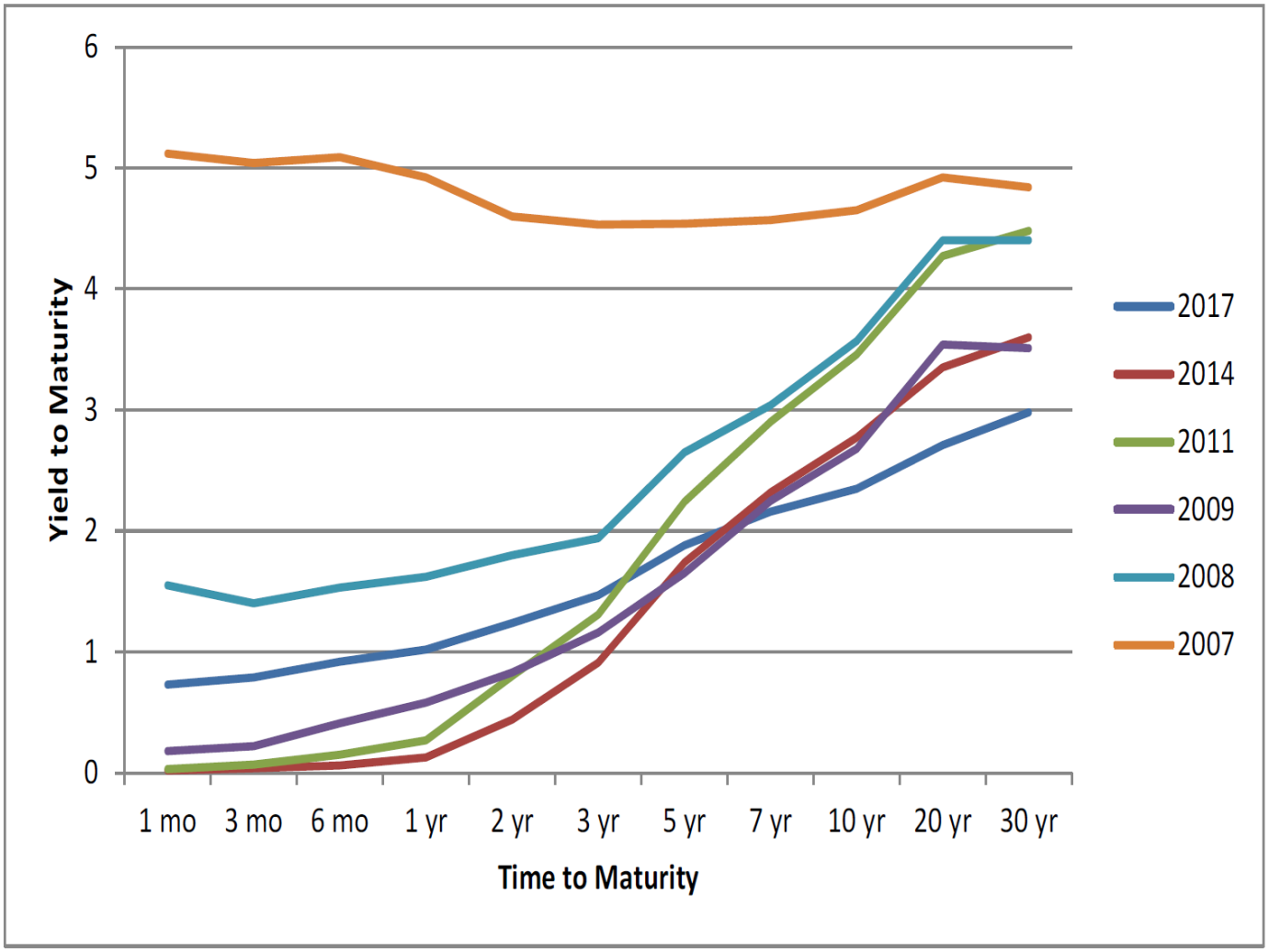
Monetary Policy Committee's Decision 8/2018

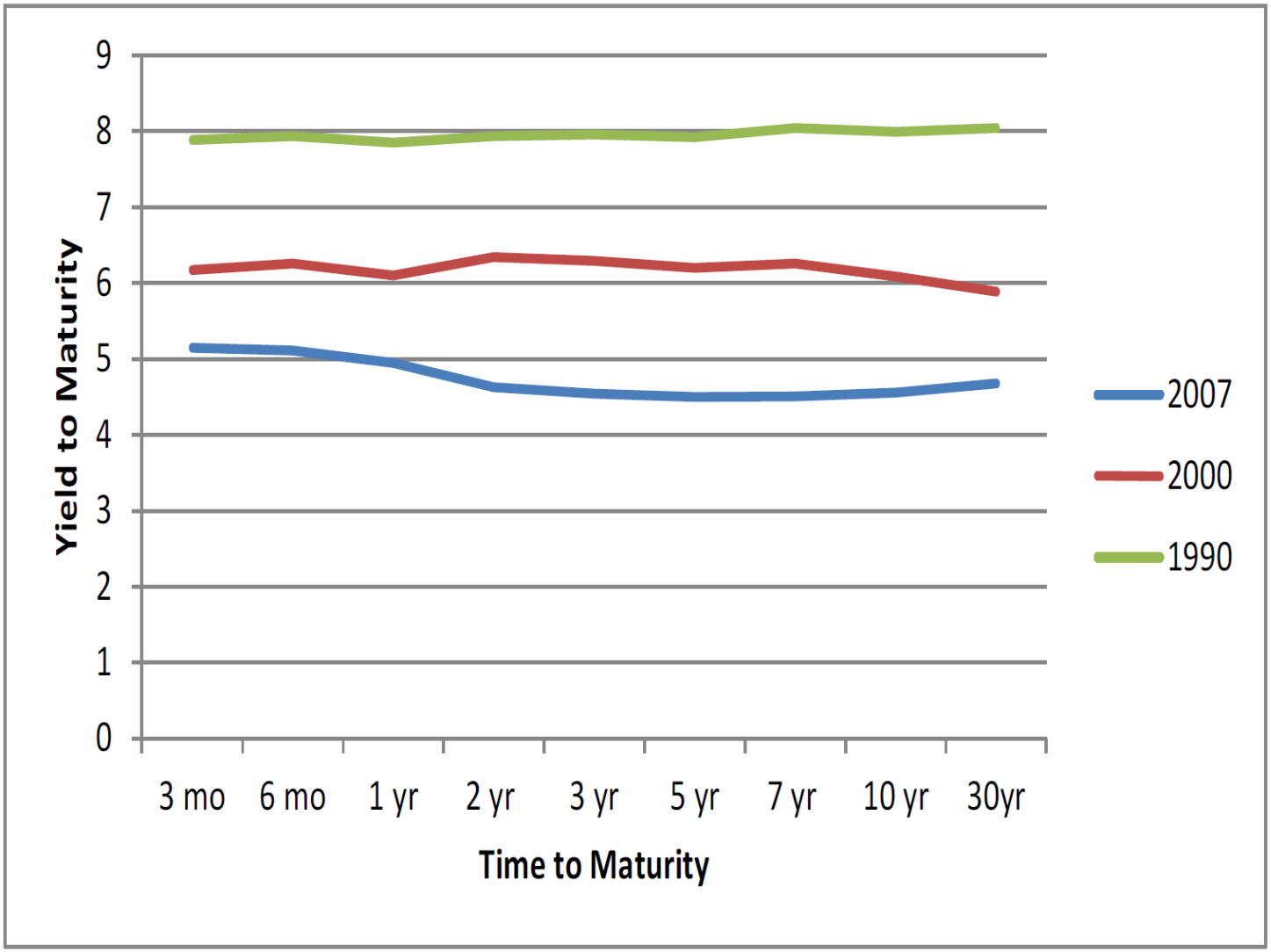
Mr. Titanun Mallikamas, Secretary of the Monetary Policy Committee (MPC), announced the outcome of the meeting on 19 December 2018 as follows.

The Committee voted 5 to 2 to raise the policy rate by 0.25 percentage point from 1.50 to 1.75 percent, effective immediately. Two members voted to maintain the policy rate at 1.50 percent.

Yield Curves Prior to Recent Recessions



Yield Curves Prior to Recent Recessions



Liquidity-Preference Hypothesis

- Empirical evidence seems to suggest that *investors have relatively* ***short time horizons*** *for bond investments.* Thus, since they are risk averse, they will ***require a premium*** *to invest in* ***longer term bonds***.

- The **Liquidity-Preference Hypothesis** states that ***longer term loans*** *have a* ***liquidity premium*** *built into their interest rates* and thus calculated ***forward rates*** will *incorporate the liquidity premium* and will *overstate the expected future one-period spot rates*.