

Econ702 Section - Week 14

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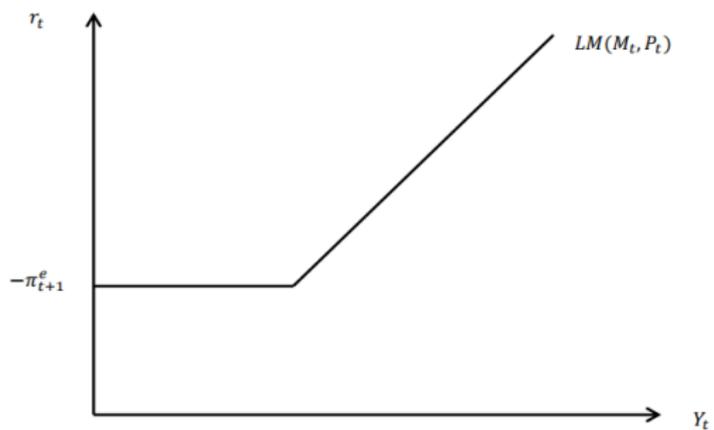
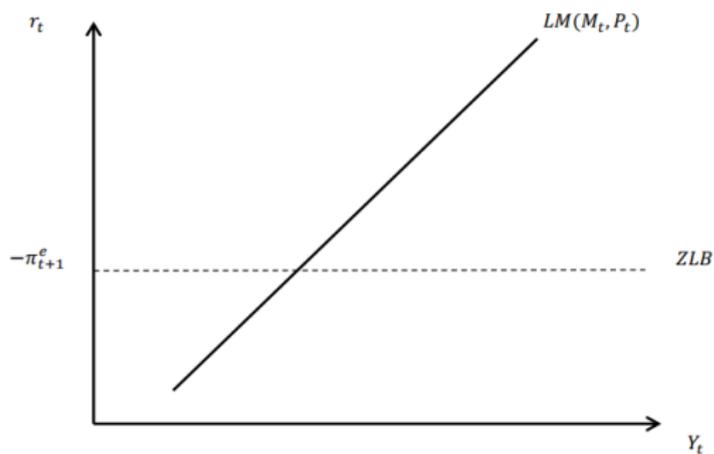
Today I will cover

- ▶ Chapter 28
 - ▶ Zero lower bound
- ▶ Chapter 33
 - ▶ Present value equation of a bond
 - ▶ Term structure theory of interest rate
- ▶ Exercise

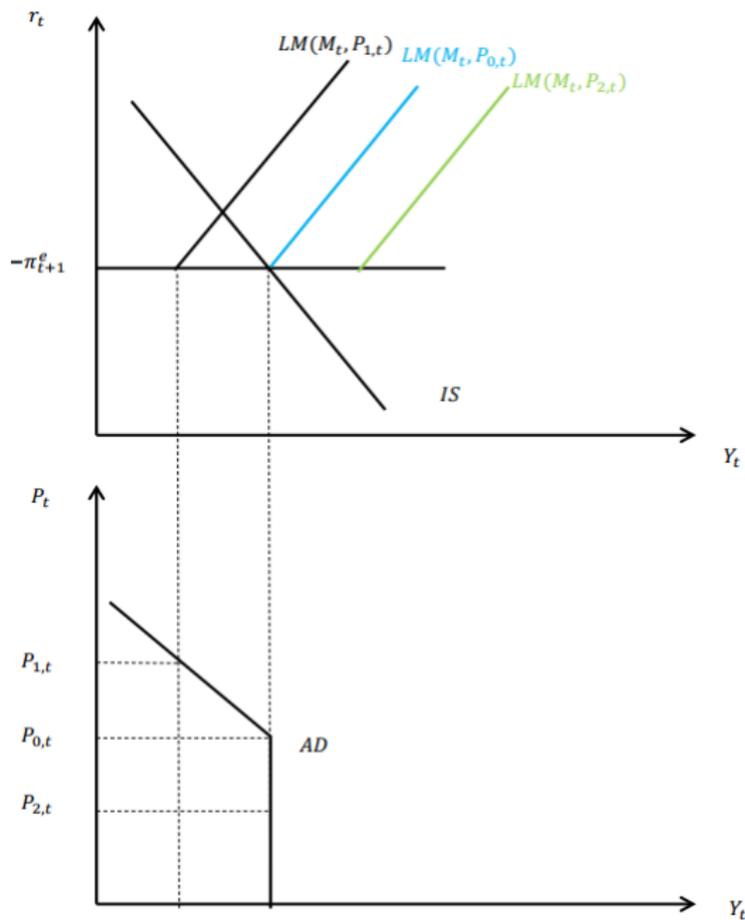
Zero lower Bound

- ▶ ZLB: The nominal interest rate cannot go below zero.
- ▶ Under ZLB, conventional (expansionary) monetary policy cannot affect output
- ▶ Unconventional monetary policy
 - ▶ Quantitative Easing involves purchasing, in large amounts, non-traditional securities, such as longer term government debt or private-sector risky debt.
 - ▶ Forward Guidance involves a central bank telegraphing its intentions for future short term interest rates.

LM curve under ZLB



AD curve under ZLB



Present value equation of a bond

- ▶ Yield to maturity (r_t) on the m period coupon bond satisfies the following present value expression

$$P_t^B = \frac{CO}{1+r_t} + \frac{CO}{(1+r_t)^2} + \dots + \frac{CO}{(1+r_t)^m} + \frac{FV}{(1+r_t)^m}$$

- ▶ The price of a bond is negatively correlated with its YTM.
- ▶ If $P_t^B = FV$, the coupon rate equals YTM.
- ▶ The yield curve plots bonds' YTM against maturities at a given point of time.

Term structure theory of interest rate

- ▶ Expectation hypothesis
 - ▶ Bonds of different maturities are perfect substitutes
 - ▶ The interest rate on a long maturity bond is approximately equal to the average of expected short term interest rates
 - ▶ YTM of N period bond is

$$i_{N,t} = \frac{1}{N}(i_{1,t} + i_{1,t+1}^e + \cdots + i_{1,t+N-1}^e)$$

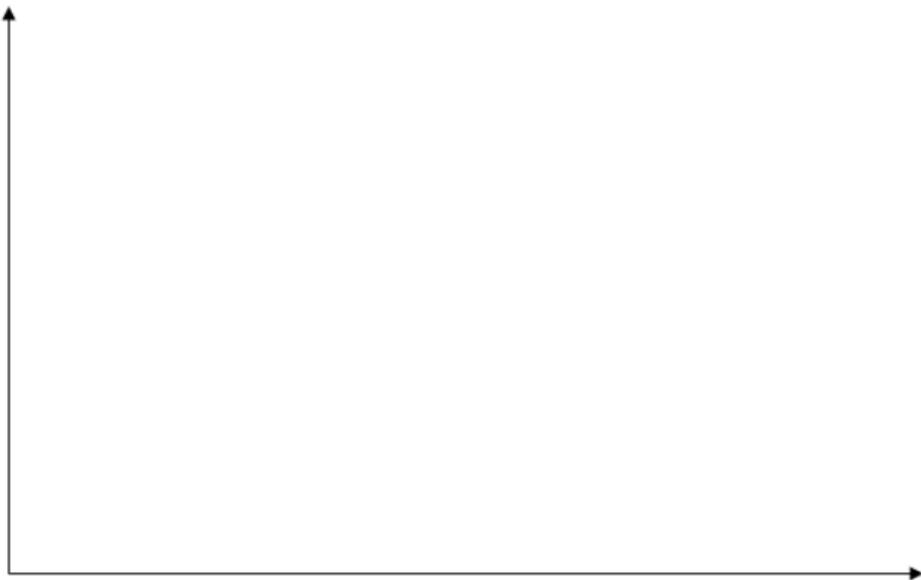
- ▶ Liquidity premium hypothesis
 - ▶ The interest rate on a long maturity bond is the sum of expectations of short term interest rate and term premium
 - ▶ YTM of N period bond is

$$i_{N,t} = \frac{1}{N}(i_{1,t} + i_{1,t+1}^e + \cdots + i_{1,t+N-1}^e) + tp_t$$

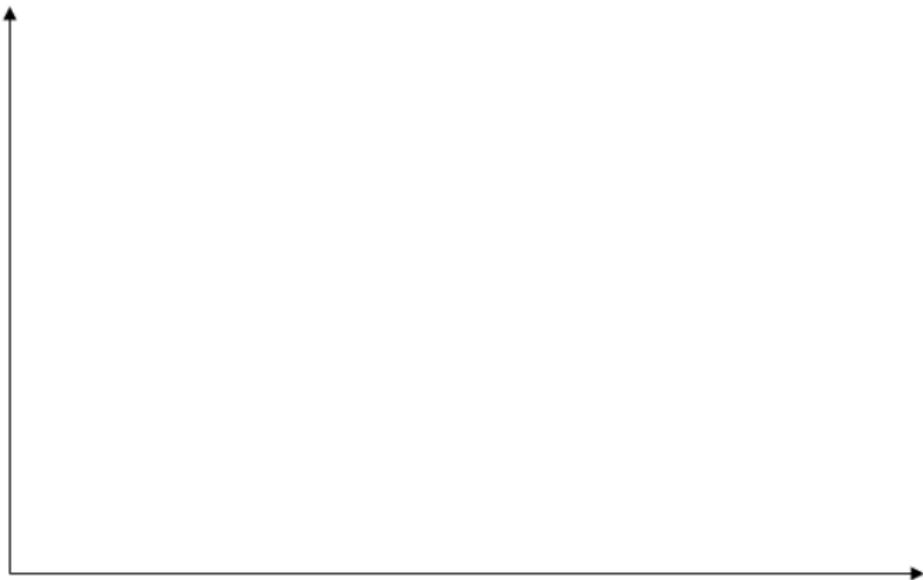
Exercise

Assume the partial sticky price model with credit spread. What would happen if the central bank conducts any policy lowering the credit spread under ZLB?

IS & LM



Aggregate supply & demand



Exercise

Suppose that the current 3 month interest rate is 0. The expected 3 month rates each period ahead are given as 0, 1, 2. Draw the yield curve under expectation hypothesis. If the central bank successfully convinced people to believe that future rates would be lowered, say 0,0,1, how would it affect the yield curve?

Yield curve

