

Midterm Exam

You have 75 minutes to complete this 70 minute exam. Place all your work in the bluebook and be sure to “box in” your answers. Show your work (so that partial credit can be granted if the final answer is incorrect).

1. [20 minutes] Suppose, due to new information, the economy is expected to experience a boom in 2015H1, i.e., rapidly increasing output. Consequently, expected inflation rises and investment opportunities (in plant and equipment) are expected to expand.

1.1. (5 minutes) Using the bond market diagram (bond price on the vertical axis), show what happens to the quantity and price of bonds. Be sure to label your curves and axes.

1.2. (5 minutes) Using the formula for the expectations hypothesis of the term structure, explain what you expect to happen to the yield curve.

1.3 (10 minutes) Suppose the generalized dividend valuation model is modified thus:

$$P_t = \frac{D_{t+1}}{1 + (rp + rf)_{t+1}} + E_t \left[\frac{D_{t+2}}{(1 + (rp + rf)_{t+2}) \times (1 + (rp + rf)_{t+2})} \right] + \dots$$

$$+ E_t \left[\frac{D_{t+n}}{(1 + (rp + rf)_{t+2}) \times \dots \times (1 + (rp + rf)_{t+n})} \right] + E_t \left[\frac{P_{t+n}}{(1 + (rp + rf)_{t+2}) \times \dots \times (1 + (rp + rf)_{t+n})} \right]$$

That is, dividends and the required rate of return on equities changes over time, and are uncertain. What do you expect to happen to the price of stocks in period t, given the new information about 2015H1? Explain, using this equation.

2. [20 minutes] Consider banks that have the following balance sheets.

2.1 (5 minutes) Suppose Bank A earns 5% on its assets. What is the Return on Equity (ROE)? Show your work.

<u>Assets</u>		<u>Liabilities</u>	
Reserves	\$50 million	Checkable deposits	\$200 million
Securities	\$50 million	Bank capital	\$50 million
Loans	\$150 million		

2.2 (3 minutes) Suppose Bank B has the following structure:

<u>Assets</u>		<u>Liabilities</u>	
Reserves	\$50 million	Checkable deposits	\$230 million
Securities	\$50 million	Bank capital	\$20 million
Loans	\$150 million		

What is the ROE in this bank?

2.3 (5 minutes) What happens in each case should the market value of the securities should fall by 50%? Show your work.

2.4 (7 minutes) Suppose Bank C has the following structure:

<u>Assets</u>		<u>Liabilities</u>	
Reserves	\$50 million	Checkable deposits	\$225 million
Securities	\$25 million		
Govt Sec.	\$50 million		
Loans	\$125 million	Bank capital	\$25 million

The way the capital adequacy ratio (CAR) is calculated in reality is by risk-weighting the assets. Reserves (cash) and government securities carry zero weight. Calculate the capital ratio for this bank. Show your work.

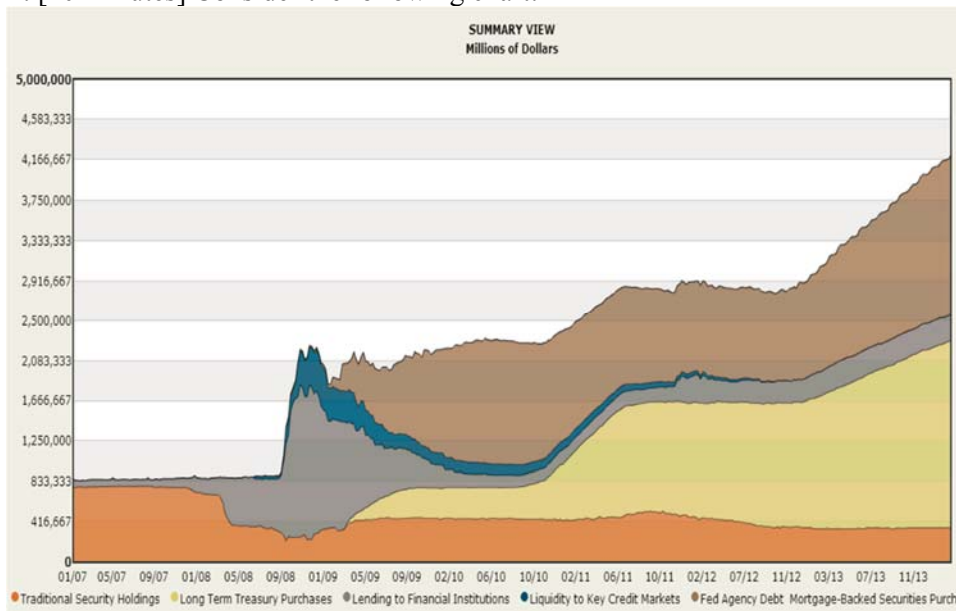
3. [10 minutes] Consider a Taylor rule of the following form:

$$i_t^{FedFunds} = \pi_t + \beta(y_t - y_t^*) + \delta(\pi_t - \pi_t^*) + r_t^*$$

3.1 (5 minutes) Suppose the output gap *rises* by 2%, and the inflation gap *falls* by 2%. Calculate the implied change in the Fed funds rate, assuming the $\beta=0.25$, and $\delta=0.75$, and all other variables remain constant. Show your work.

3.2 (5 minutes) Suppose instead inflation rises by 1%, and all other factors remain constant. How much should the Fed raise the Fed funds rate.

4. [10 minutes] Consider the following chart:



4.1 (5 minutes) Suppose the following equation describes how long term interest rates are linked to short term:

$$i_{nt} = \frac{(i_{1t} + i_{1t+1}^e + \dots + i_{1t+n-1}^e)}{n}$$

In this context, can purchases of long term Treasury securities affect long term interest rates?

4.2 (5 minutes) Will purchases of mortgage backed securities (MBS's) have a larger or smaller impact on prices of (MBS's) if investors treat MBS's and Treasury securities as very different.

5. [10 minutes] Consider an economy, where money demand does *not* depend on wealth.

5.1 (5 minutes) Suppose investment spending is given by:

$$I = b_0 + b_1Y - b_2i$$

Do we know if government spending will result in increased or reduced investment? Use a graph to help explain your answer; equations might be helpful.

5.2 (5 minutes) If the economy starts out in a liquidity trap, what is the impact of an increase in government spending on investment? Use a graph to help explain your answer. Be careful to state your assumptions.