Economics 435 Fall 2019 University of Wisconsin-Madison

Midterm Exam 1

You have 65 minutes to complete this 60 minute exam. Be sure to "box in" your answers. Show your work (so that partial credit can be granted if the final answer is incorrect).

1. [15 minutes total] Suppose the yield on a five year bond is 1%, and the yield on a ten year bond is 1.5%.

1.1 (10 minutes) Calculate the average value of the one year interest rates prevailing in years 5, 6, 7, 8, and 9, assuming the expectations hypothesis of the term structure hold. Show your algebraic work!

1.2 (5 minutes) Can you solve for what the 5 year bond yield is expected to be five years from now?

2. [20 minutes total] Suppose the economy is described by the following equations:

• Real	Sector		
(1)	Y = Z	Output equals aggregate demand, an equilibrium condition	
(2)	Z = C + I + G	Definition of aggregate demand	
(3)	$C = c_o + c_1 Y_D - c_2 i$	Consumption fn, c_1 is the marginal propensity to consume	
(4)	$Y_D \equiv Y - T$	Definition of disposable income	
(5)	$T = t_1 Y$	Tax function; t_1 is marginal tax rate.	
(6)	$I = b_0 + b_1 Y - b_2 i$	Investment function	
(7)	$G = GO_0$	Government spending on goods and services, exogenous	

• Asset Sector

$\mu_{i} - \mu_{0}$	(1)M	$\left(\frac{1}{2}\right)_{\perp}\left(\frac{1}{2}\right)_{V}$
$\frac{1-h}{h}$	$\overline{h}/\overline{P_0}$	$\left[\int_{a}^{T} \left(\overline{h} \right)^{T} \right]$

2.1 (4 minutes) Solve for the IS curve (*Y* as a function of *i*).

2.2 (4 minutes) Solve for equilibrium income.

2.3 (4 minutes) Calculate the government spending multiplier.

2.4 (4 minutes) Is the government spending multiplier smaller than in the standard model covered in class? Why or why not?

2.5 (4 minutes) Is monetary policy more or less powerful than in the standard model covered in class? Why or why not?

3. [15 minutes total] Asset prices. Suppose:

$$P_{t} = \frac{D_{t+1}}{1 + rf + rp} + \frac{E_{t}P_{t+1}}{1 + rf + rp}$$
(2)

3.1 (7 minutes) Solve for the stock price assuming expectations are rational and there are no bubbles. Show your work as much as possible.

- 3.2 (4 minutes) Calculate the price of a share of stock, assuming dividends are expected to be constant at $D_0 = 1$ and (rf + rp) is also expected to be constant at 0.10. Show your algebraic work.
- 3.2 (4 minutes) Suppose that you revise your expectations regarding (rf + rp) downward by 5 percentage points. What immediately happens to the price of the share of stock? Once again, show your work.
- 4. [10 minutes total] Suppose we have the AD-AS model outlined in lecture.



4.1 (3 minutes) Assume tariffs placed on imported goods shift out the AD curve by 5% at price level P_0 . Show what happens in period 1

4.2 (3 minutes) Show what happens over time.

4.3 (4 minutes) Assume that the tariffs placed in period 1 increase imported good prices, so Y^{FE} decreases immediately by 3%, and the price level rises by 5%. Show what happens in period 1, and thereafter.

e435mt1a_f19 13.10.2019