

Write your name on the cover of the test booklet and nowhere else. Enclose this sheet with the booklet. The Excel file will be handed in via Canvas. Your name will only appear on a page of the file that has nothing else on it. Failure to follow these directions will cost you 1 point. The test has 100 points (to be scaled up to 170 points) and is scheduled to take 50 minutes (but you can take the full 2 hours.) Therefore, expect to spend 1 minute for every 2 points. For example, a 10-point question should take 5 minutes.

1) Use the following equations to answer this question. $C_t = 300 + 0.9(\text{average}(Y_t, Y_{t-1}, Y_{t-2}) - T_t)$.

$T_t = 0.1Y_t$

$I_t = .2(Y_t - Y_{t-1})$

$G_t = 400$

$NX_t = 600 - 0.01Y_t$

A) (12 points) Solve the equations for Y_t as a function of exogenous variables and lagged variables. Show all work.

B) (12 points) Put the equations from Part A into a spreadsheet. Use it to predict GDP for 30 periods if the GDP for the last two periods was \$5000 each. Make sure you format the numbers correctly. Use the spreadsheet to determine what would happen if the government spending went up \$100 permanently. Find both the long-run (30 periods) and short-run government spending multipliers for a permanent change in G.

C) (12 points) Have the computer plot the data in Part B. Make sure the graph is fully labeled. Is that pattern monotonic convergence, monotonic divergence, oscillating convergence, or oscillating divergence? Explain your logic.

2) (10 points) Answer EITHER Part A OR Part B using the tables below.

A) What criteria would you use to determine how long the MCD is for a variable? Why would you choose that criteria? Given the table below, what would you say should be the MCD for “composite of S-T interest rates”? If you feel that 8 is not enough, state why you said that. If you choose 8 or less, then just state how you got that value.

B) Suppose the “composite of S-T interest rates” went down by 2% in a month during a boom. What is the probability that the economy will be changing? State how you got that number. What is the economy changing to?

Table 3

Proportions of Occurrences In Which Trends of Various DURATIONS Involved Cyclical Reversals of Business Activity

	Decreasing Trends During Cyclical Expansions								Increasing Trends During Cyclical Contractions								
	Months of Duration								Months of Duration								
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	
Primary Lagging																	
Composite of S-T interest rates	0.20	0.32	0.36	0.42	0.42	0.48	0.63	0.67	0.32	0.45	0.53	0.59	0.59	0.59	0.63	0.77	

Table 4

Proportions of Occurrences In Which Trends of Various MAGNITUDES Involved Cyclical Reversals of Business Activity

	Decreasing Trends During Cyclical Expansions								Increasing Trends During Cyclical Contractions								
	Percentage Decrease Larger Than								Percentage Increase Larger Than								
	0.0	0.3	0.5	1.0	3.0	5.0	10.0	20.0	0.0	0.3	0.5	1.0	3.0	5.0	10.0	20.0	
Primary Leading																	
Composite of S-T interest rates	0.21	0.21	0.22	0.26	0.42	0.48	0.67	0.71	0.32	0.32	0.32	0.33	0.43	0.53	0.67	0.67	

3) (10 points) Answer EITHER Part A OR Part B.

A) Suppose that leading indicators showed that the economy was improving, but lagging variables showed that GDP was falling. Where in the business cycle do you think the economy was at? Explain

your logic.

B) What is meant by “smoothness”? Why would we want a variable we are using to forecast to have that quality? Explain your logic.

4) (12 points) For EITHER average workweek in manufacturing OR rate of change in consumer debt, determine if it is pro-cyclical, counter-cyclical, or acyclical. Explain your logic. Is it leading, lagging, or roughly coincident? Explain your logic.

5) (32 points) Answer EITHER Part A OR Part B.

A) Draw the LRAS/SRAS/AD diagram, the IS/LM/FE diagram, and the real MS/real MD diagram. Have your initial situation show an unemployment rate of 3.5% (the latest rate for the USA). State how you know your graph shows 3.5% unemployment rate. Illustrate how the economy gets back to full employment. Explain why the curves moved as drawn. What happens to the real interest rate, the unemployment rate, and the inflation rate?

B) Draw the LRAS/SRAS/AD diagram, the IS/LM/FE diagram, and the real MS/real MD diagram. Have your initial situation showing full employment. Illustrate the effects of a decrease in the corporate tax rate. Explain why the curves moved as drawn. What happens to the real interest rate, the unemployment rate, and the inflation rate?