

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 Moodle. 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) Suppose consumption is \$100 more than 90% of (average of this year's income, last year's income, and two years ago's GDP minus this year's taxes). The tax rate is 1/3 of GDP. Investment is 50% of the value of (this year's GDP - last year's GDP). Government spending is \$500. Exports are \$200 and imports are 10% of this year's GDP.

A) (6 points) Write these equations.

B) (10 points) Solve the equations for  $Y_t$  as a function of exogenous variables and lagged values of GDP. Show all work. What is the short-run government spending multiplier? Briefly state how you found it.

C) (8 points) If GDP had been \$1000 for several years, then have Excel calculate the levels of GDP for the next 30 years.

D) (10 points) Plot the data for GDP on the Excel sheet making sure everything is labeled. What is the pattern of the graph? State how you reached that conclusion

2) (10 points) Answer EITHER Part A OR Part B.

A) Table 4 of your supplemental text is entitled **Proportions of Occurrences In Which Trends of Various MAGNITUDES Involved Cyclical Reversals of Business Activity**. Part of the table is recreated below. Would you use this table if the *change in consumer debt* decreased 1.4% in one month or if it increased 0.4% for one month? Explain your logic. What is the probability the economy is changing? Explain your logic.

Decreasing Trends During Cyclical Expansions	Percentage Increase Larger Than							
	0.0	0.3	0.5	1.0	3.0	5.0	10.0	20.0
Change in consumer debt	0.34	0.50	0.63	0.91	1.00	1.00	1.00	1.00

B) Table 3 of your supplemental text is entitled **Proportions of Occurrences In Which Trends of Various DURATIONS Involved Cyclical Reversals of Business Activity**. Part of the table is recreated below. Would you use this table if *housing permits* increased for 5 months during a recession or if housing permits decreased for 5 months during a boom? Explain your logic. What is the probability the economy is changing? Explain your logic.

Increasing Trends During Cyclical Contractions	Months of Duration							
	1	2	3	4	5	6	7	8
housing permits	0.27	0.36	0.47	0.60	0.64	0.64	0.75	0.82

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

A) Determine if *new orders of consumer goods* is pro-cyclical, counter-cyclical, or acyclical. Explain your logic. Determine if it is leading, roughly coincident, or lagging. Explain your logic.

B) Explain what *smoothness* means and why a variable needs that to be a good indicator used in forecasting.

4) (10 points) For EITHER *real GDP* OR *growth rate of GDP*, determine if the plot of that variable general looks like monotonic convergence, monotonic divergence, oscillating convergence, or oscillating divergence. Explain your logic.

5) (36 points) Answer EITHER Part A OR Part B.

A) Illustrate the effects of an increase in the  $MPK^f$ , on the LRAS/SRAS/AD, IS/LM/FE, and real MS/real MD diagrams. Explain why the curve(s) moved as drawn. What happens to the price level, unemployment rate interest rates, and GDP?

B) Illustrate an economy in an inflationary gap on the LRAS/SRAS/AD, IS/LM/FE, and real MS/real MD diagrams. Explain how you know it is in an inflationary gap. Draw the effects of the economy correcting itself. Explain why the curve(s) moved as drawn. What happens to the price level, unemployment rate, interest rates, and GDP?