

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.

The first table is from Table 3, “Proportion of Occurrences in Which Trends of Various DURATIONS Involve Cyclical Reversals of Business Activities.” The first columns are for “Decreasing Trends During Cyclical Expansions - Months” and that later columns are for “Increasing Trends During Cyclical Contractions - Months”. It is for initial claims for unemployment insurance.

1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
.21	.25	.29	.36	.41	.45	.45	.53	.39	.53	.53	.64	.75	.82	.90	.90

The next table is from Table 4, “Proportion of Occurrences in Which Trends of Various MAGNITUDES Involve Cyclical Reversals of Business Activities.” The first columns are for “Decreasing Trends During Cyclical Expansions - Percent Decrease Larger Than” and that later columns are for “Increasing Trends During Cyclical Contractions - Percent Increase Larger Than”. It is for composite of S-T interest rates..

0.0	0.3	0.5	1.0	3.0	5.0	10	20	0.0	0.3	0.5	1.0	3.0	5.0	10	20
.20	.21	.22	.26	.42	.48	.67	.71	.32	.32	.32	.33	.43	.67	.67	1.0

1) (8 points) For EITHER the event in Part A OR the event in Part B, determine the probability that the economy is changing direction. Briefly tell me how you figured out which table to use, which half of it to use, and which column to use. Also tell me if the probability you gave me is for entering a recession or a boom.

A) The composite of S-T interest rates increases 1.4% during a recession.

B) The initial claims for unemployment insurance decreases for 4 months during a recession.

2) (8 points) Answer EITHER Part A OR Part B. This question is actually easier than it appears.

A) How could you use Table 3 to determine if a variable is good for conformity? Explain your logic.

B) How could you use Table 4 to determine if a variable is good for smoothness? Explain your logic.

3) (12 points) For EITHER *composite of short-term interest rates* OR *initial claims of unemployment insurance*, is it procyclical, acyclical, or counter-cyclical? Explain your logic. Is it leading, lagging, or roughly coincident? Explain your logic.

4) (12 points) For EITHER *conformity* OR *smoothness*, explain what that term means and why we want a variable to have that quality.

5) (10 points) Answer EITHER Part A OR Part B.

A) Normally, two consecutive quarters of falling GDP indicates a recession. However, GDP fell for both of the first two quarters of 2022. Why didn't they classify that as a recession?

B) Suppose that 40% of the leading indicators say the economy will be going down and 50% say it is not changing. Suppose that 70% of the lagging indicators say the economy will be going up and the rest say it is not changing. Where do you think the economy is on the business cycle? Explain your logic

6) Use the following equations to answer this question. $C_t = 300 + 0.72(\text{average}(Y_t, Y_{t-1}, Y_{t-2}) - T_t)$.
 $T_t = 0.1Y_t$ $I_t = 0.24(Y_t - Y_{t-1})$ $G_t = 1440$ $NX_t = 420 - 0.128Y_t$

A) (12 points) Solve the equations for Y_t as a function of exogenous variables and lagged variables. You are allowed to write improper fractions in your answer. Show all work.

B) (10 points) Put the equations from Part A into a spreadsheet. Use it to predict GDP through year 25 if the GDP for the last two periods were \$3000 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 both of the GDPs in Part B on the same graph. Make sure the graph is fully labeled. Is that pattern monotonic convergence, monotonic divergence, oscillating convergence, or oscillating divergence? Explain your logic.

7) (16 points) Answer EITHER Part A OR Part B.

A) Draw the LRAS/SRAS/AD diagram. Illustrate the effects of an increase in working age population. Show the effects that will occur this year. Explain why the curve(s) moved as drawn. What happens to unemployment, GDP, and inflation.

B) Draw the LRAS/SRAS/AD diagram. The Federal Reserve will meet next week. It is expected that they will decrease interest rates. Illustrate the short-run effects on the graph. Explain why the curve(s) moved as drawn. What will happen to GDP, inflation, and unemployment?