

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) Answer EITHER Part A OR Part B.

A) Suppose initial claims for unemployment insurance went down for 3 months during a recession. What is the probability the economy is changing? Explain how you found that number and whether that means it is entering a boom or an economic contraction.

B) According to <https://fred.stlouisfed.org/graph/?id=TB3MS>, the three-month Treasury bill interest rate dropped 5.03% (my calculation) on a monthly basis from November to December. What is the probability the economy is changing? Explain how you found that number and whether that means it is entering a boom or an economic contraction.

2) (8 points) Answer ONE of the three parts.

A) Why do we take moving averages of variables rather than looking at just the most recent value for that variable?

B) If you were to plot GDP over time, would it be monotonic convergence, monotonic divergence, oscillating convergence, or oscillating divergence? Explain your logic.

C) Why is the last step (in the supplemental textbook’s steps in forecasting) called “judgement”?

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

A) In the first table I provided, the columns for “decreasing trends during cyclical expansions” have smaller numbers than for the “increasing trends during cyclical contractions” for the same amount of time. What is it about initial claims of unemployment do you think causes that? Explain your logic.

B) According to <https://get.ycharts.com/resources/blog/recession-indicators-2025-framework/> their

“leading indicators” is showing a slight decline in the economy, “GDP growth year-over-year” shows strong increase, and the “unemployment rate” is borderline possibly showing a decline in the economy. From that information only, do you think we are entering a recession? Explain your logic.

4) Use the following equations to answer this question. $C_t = 200 + 0.8[\text{average}(Y_t, Y_{t-1}, Y_{t-2}, Y_{t-3}) - T_t]$.
 $T_t = 0.2Y_t$ $I_t = 0.2(Y_t - Y_{t-1})$ $G_t = 300$ $NX_t = 600 - 0.04Y_t$

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 40 if the GDP for the last period was \$2200, $Y_{t-2} = \$2000$, and Y_{t-3} was \$1800. Make sure you format the numbers correctly. Use the spreadsheet to determine what would happen if the government spending went up \$10 permanently. Find both the long-run (40 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.

5) (12 points) For EITHER *smoothness* OR *conformity*, explain what that means and why we would want a variable to have it if we are going to use it for forecasting.

6) (12 points) Answer EITHER Part A OR Part B.

A) I have found an article which says that the number of times the word “recession” appears in the New York Times and Washington Post is an indicator of a recession. When the word appears more, the recession is more likely. Assuming that is true, is that pro-cyclical or counter-cyclical? Do you think that is leading, lagging, or roughly coincident? Explain your logic for both parts. <https://money.usnews.com/investing/stock-market-news/slideshows/unusual-economic-indicators-to-watch?slide=6>

B) Is “change in labor cost per unit of output” pro-cyclical or counter-cyclical? Do you think that is leading, lagging, or roughly coincident? Explain your logic for both parts.

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

A) Draw the LRAS/SRAS/AD diagram. Illustrate the effects of President Trump’s deportations. Explain why the curve(s) moved as drawn. What happens to inflation, GDP, and unemployment?

B) Draw the LRAS/SRAS/AD diagram. Illustrate the effects of President Trump’s income tax cuts. Explain why the curve(s) moved as drawn. What happens to inflation, GDP, and unemployment?