

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. Therefore, expect to spend 1 minute for every 2 points. For example, a 10-point question should take 5 minutes. I cannot give extra time because of the class which follows yours.

1) Do all parts of this question. The points are distributed as described.

A) (6 points) Suppose consumption this year is 90% of the average of this year's income, last year's income, and income two years ago. Investment this year is 10% of this year's GDP. This year's Government spending is 900. This year's exports are 300. This year's imports are 40% of last year's GDP. Write out these equations.

B) (12 points) Use mathematics to derive the equation for this year's GDP as a function of lagged GDP and exogenous variables. Show all work.

C) (8 points) Place the formulas into your Excel file and have it calculate GDP up through year 60.

D) (6 points) Place the formulas into your Excel file with a new permanent change in government spending in year 0 to 1000. Calculate GDP up through year 60. What are the short-run and long-run government spending multipliers? Explain how you reached your conclusion.

E) (8 points) Plot the graph for GDP from Part C. What type of pattern is that? Briefly explain your logic.

2) (8 points) Answer EITHER Part A OR Part B using the tables on the back of this sheet.

A) If GDP was falling and you saw that stock prices went up 5% in one month, then would you expect that a recession is ending, a recession is beginning, or is more information needed? Briefly explain your logic including the probability that the economy is changing as you predicted.

B) If GDP was rising and you saw that vendor performance went down for 5 months straight, then would you expect that a recession is ending, a recession is beginning, or is more information needed? Briefly explain your logic including the probability that the economy is changing as you predicted.

3) (8 points) For EITHER *conformity* OR *smoothness*, define the property and explain why a variable should have that property.

4) (10 points) For ONE of the following variables, determine if it is a leading, coincident, or lagging indicator. Explain why you would categorize it that way.

A) Index of Consumer Expectations

B) Duration of unemployment

5) (34 points) Illustrate EITHER the event in Part A OR the event in Part B on the IS/LM/FE diagram and the SRAS/LRAS/AD diagram. Use the **same** event for both diagrams. Explain why the curve(s) moved as drawn. What happens to GDP, the price level, and the real interest rate? Just show the short-run effects.

A) The expected future marginal productivity of capital increases.

B) Wealth increases.

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 Leading																
M1 Money Supply	0.20	0.32	0.43	0.47	0.60	0.64	0.69	0.69	0.25	0.36	0.43	0.56	0.60	0.75	0.75	0.75
Yield Curve Index	0.67	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.71	0.83	0.83	0.83	1.00	1.00	1.00	1.00
Index of Manufacturers' Supply Prices	0.27	0.31	0.38	0.42	0.48	0.53	0.59	0.59	0.38	0.41	0.47	0.47	0.50	0.56	0.64	0.64
New Orders, Consumer Goods	0.19	0.26	0.30	0.36	0.41	0.53	0.60	0.64	0.35	0.43	0.45	0.50	0.56	0.60	0.60	0.64
New orders, Core Capital Goods	0.19	0.26	0.30	0.36	0.41	0.53	0.60	0.64	0.33	0.41	0.45	0.47	0.56	0.69	0.82	0.82
Housing Permits	0.29	0.38	0.38	0.45	0.53	0.67	0.71	0.71	0.27	0.36	0.47	0.60	0.64	0.64	0.75	0.82
Mfg. & Trade Sales/Inventories	0.17	0.37	0.64	0.70	0.78	1.00	1.00	1.00	0.43	0.60	0.86	0.86	0.86	1.00	1.00	1.00
Vendor Performance	0.24	0.30	0.36	0.38	0.41	0.43	0.47	0.53	0.41	0.43	0.60	0.69	0.69	0.75	0.82	0.90
Stock Prices	0.20	0.24	0.32	0.38	0.53	0.56	0.59	0.59	0.28	0.33	0.43	0.53	0.60	0.64	0.75	0.82
Average Workweek, Mfg.	0.24	0.26	0.32	0.40	0.48	0.50	0.53	0.56	0.40	0.45	0.56	0.63	0.67	0.67	0.71	0.77
Initial Claims, Unemployment Ins.*	0.21	0.25	0.29	0.36	0.41	0.45	0.45	0.53	0.39	0.53	0.53	0.64	0.75	0.82	0.90	0.90
Change in Consumer Debt	0.34	0.38	0.40	0.50	0.56	0.67	0.71	0.71	0.27	0.31	0.31	0.50	0.53	0.56	0.69	0.69
Primary Roughly Coincident																
Nonagricultural Employment	0.18	0.56	0.77	0.83	1.00	1.00	1.00	1.00	0.50	0.77	1.00	1.00	1.00	1.00	1.00	1.00
Industrial Production	0.13	0.28	0.48	0.50	0.53	0.63	0.71	0.77	0.45	0.59	0.67	0.83	0.83	0.91	0.91	1.00
Personal Income, Less Transfer Pmts.	0.14	0.32	0.47	0.54	0.64	0.78	1.00	1.00	0.55	0.67	0.75	0.75	0.75	0.75	0.86	0.86
Manufacturing and Trade Sales	0.11	0.19	0.35	0.54	0.64	0.70	0.78	0.78	0.40	0.55	0.75	0.75	0.75	0.75	1.00	1.00
Civilian Employment/Population	0.16	0.20	0.27	0.32	0.45	0.47	0.47	0.53	0.33	0.45	0.60	0.64	0.69	0.69	0.75	0.90
Gross Domestic Product†	0.54	0.54	0.54	0.64	0.88	1.00	1.00	1.00	0.67	0.67	0.67	0.86	0.86	0.86	0.86	0.86
Primary Lagging																
Average Duration of Unemployment*	0.16	0.21	0.27	0.34	0.45	0.48	0.50	0.56	0.35	0.47	0.82	0.90	1.00	1.00	1.00	1.00
Manufacturing and Trade Inventories	0.17	0.37	0.64	0.70	0.78	1.00	1.00	1.00	0.43	0.60	0.86	0.86	0.86	1.00	1.00	1.00
Commercial & Industrial Loans	0.18	0.31	0.40	0.56	0.59	0.59	0.67	0.71	0.36	0.53	0.63	0.83	0.91	1.00	1.00	1.00
Consumer Debt/Personal Income	0.21	0.40	0.50	0.56	0.56	0.67	0.71	0.71	0.27	0.39	0.50	0.53	0.56	0.60	0.64	0.64
Chg. In Labor Cost/Unit of Output	0.26	0.31	0.38	0.39	0.41	0.43	0.43	0.45	0.36	0.53	0.75	0.82	0.82	0.90	0.90	0.90
Composite of S-T Interest Rates	0.20	0.31	0.36	0.42	0.42	0.48	0.63	0.63	0.32	0.45	0.53	0.59	0.59	0.59	0.63	0.77

Note: All dollar-denominated series are in constant dollars. * Inverted. † Quarterly; duration shown in quarters.

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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																
M1 Money Supply	0.20	0.33	0.47	0.75	1.00	1.00	1.00	1.00	0.25	0.43	0.47	0.69	1.00	1.00	1.00	1.00
Yield Curve Index	0.67	0.86	1.00	1.00	1.00	1.00	1.00	1.00	0.86	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Index of Manufacturers' Supply Prices	0.27	0.28	0.29	0.31	0.37	0.40	0.53	0.71	0.42	0.42	0.42	0.50	0.53	0.56	0.59	0.67
New Orders, Consumer Goods	0.19	0.25	0.27	0.36	0.60	0.90	1.00	1.00	0.35	0.39	0.43	0.50	0.75	0.90	0.90	1.00
New orders, Core Capital Goods	0.13	0.15	0.16	0.17	0.31	0.53	0.80	1.00	0.30	0.31	0.35	0.35	0.47	0.67	0.80	1.00
Housing Permits	0.29	0.33	0.33	0.37	0.48	0.59	0.77	1.00	0.30	0.36	0.37	0.42	0.50	0.67	0.77	1.00
Mfg. & Trade Sales/Inventories	0.17	0.50	0.78	1.00	1.00	1.00	1.00	1.00	0.50	0.70	1.00	1.00	1.00	1.00	1.00	1.00
Vendor Performance	0.24	0.26	0.26	0.26	0.35	0.43	0.47	0.75	0.41	0.41	0.41	0.43	0.53	0.69	0.69	0.69
Stock Prices	0.20	0.20	0.22	0.24	0.45	0.53	0.71	1.00	0.31	0.33	0.33	0.36	0.50	0.71	0.91	1.00
Average Workweek, Mfg.	0.24	0.38	0.48	0.67	1.00	1.00	1.00	1.00	0.40	0.63	0.67	0.91	1.00	1.00	1.00	1.00
Initial Claims, Unemployment Ins.*	0.21	0.21	0.23	0.25	0.36	0.45	0.64	0.82	0.39	0.43	0.43	0.47	0.56	0.75	0.90	1.00
Change in Consumer Debt	0.34	0.50	0.63	0.91	1.00	1.00	1.00	1.00	0.30	0.67	0.71	0.83	1.00	1.00	1.00	1.00
Primary Roughly Coincident																
Nonagricultural Employment	0.18	0.59	0.63	0.77	1.00	1.00	1.00	1.00	0.50	0.91	0.91	1.00	1.00	1.00	1.00	1.00
Industrial Production	0.13	0.20	0.29	0.45	0.67	0.91	1.00	1.00	0.45	0.53	0.59	0.77	1.00	1.00	1.00	1.00
Personal Income, Less Transfer Pmts.	0.14	0.28	0.44	0.70	1.00	1.00	1.00	1.00	0.64	0.88	0.88	1.00	1.00	1.00	1.00	1.00
Manufacturing and Trade Sales	0.11	0.20	0.27	0.54	1.00	1.00	1.00	1.00	0.47	0.70	0.78	0.88	1.00	1.00	1.00	1.00
Civilian Employment/Population	0.16	0.41	0.47	0.90	1.00	1.00	1.00	1.00	0.33	0.60	0.90	1.00	1.00	1.00	1.00	1.00
Gross Domestic Product†	0.54	0.70	0.88	1.00	1.00	1.00	1.00	1.00	0.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Primary Lagging																
Average Duration of Unemployment*	0.16	0.16	0.16	0.20	0.30	0.37	0.83	0.91	0.38	0.38	0.38	0.59	0.83	1.00	1.00	1.00
Manufacturing and Trade Inventories	0.17	0.50	0.78	1.00	1.00	1.00	1.00	1.00	0.50	0.70	1.00	1.00	1.00	1.00	1.00	1.00
Commercial & Industrial Loans	0.18	0.24	0.31	0.45	0.83	1.00	1.00	1.00	0.36	0.45	0.59	0.71	0.91	1.00	1.00	1.00
Consumer Debt/Personal Income	0.20	0.33	0.43	0.50	1.00	1.00	1.00	1.00	0.30	0.48	0.56	0.77	1.00	1.00	1.00	1.00
Chg. In Labor Cost/Unit of Output	0.26	0.30	0.32	0.41	0.60	0.75	1.00	1.00	0.36	0.53	0.60	0.90	1.00	1.00	1.00	1.00
Composite of S-T Interest Rates	0.20	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

Note: All dollar-denominated series are in constant dollars. * Inverted. † Quarterly; magnitude shown in quarters.

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