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 240 points (to be scaled down to 200 points) and is scheduled to take 120 minutes. Therefore, expect to spend 1 minute for every 2 points. For example, a 10-point question should take 5 minutes.

1) (10 points) Answer EITHER Part A OR Part B.
A) Suppose housing permits went up for three months during a boom. What is the probability that we are entering a recession? Explain how you found which column you were in.
B) Suppose housing permits went up .7% during a month during a boom. What is the probability that we are entering a recession? Explain how you found which column you were in.

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 ————*							
Primary Leading	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
housing permits	0.16	0.21	0.27	0.43	0.45	0.48	0.50	0.56	0.35	0.47	0.82	0.90	1.00	1.00	1.00	1.00

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 ———*							
Primary Leading	*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*
housing permits	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

2) (12 points) Answer EITHER Part A OR Part B.
A) Given the tables in Question #1, how long would you say is the "months of cyclical dominance" (MCD) for housing permits? Explain your logic.
B) The supplemental text lists several qualities a good variable for forecasting must have. One of them is "timing." What does that mean and why is that an important quality?

3) (14 points) For EITHER rate of change of consumer debt OR index of consumer expectations, determine if it is pro-cyclical, counter-cyclical, or acyclical. Is it a leading, lagging, or a roughly coincident statistic. Explain your logic for both parts.

4) (14 points) Answer EITHER Part A OR Part B.
A) Explain the money multiplier process.
B) Suppose the Fed buys bonds on the open market. Explain how that affects the monetary base, the money multiplier and the money supply. Explain your logic.

5) (20 points) Answer EITHER Part A OR Part B.
A) Draw the IS/LM/FE diagram. President Trump decreased the corporate tax rate. Illustrate the effects of that on the graph. Explain why the curve(s) moved as drawn. What happens to the interest rate and GDP?
B) Draw the real MS/real MD diagram. Use it to prove the neutrality of money.

6) (20 points) Answer EITHER Part A OR Part B.
A) Draw the supply and demand for the US$ with the Japanese yen, ¥, as the other currency. Illustrate the effects of the Japanese interest rates going down the past decade. Explain why the curve(s) moved as

drawn. Which currency depreciated? How can you tell?

B) Draw the supply and demand for the US$ with the Chinese yuan as the other currency. China has pegged their exchange rate of their currency to the US$. Some people think they under-valued their currency. Draw that peg on the graph and explain how you know the yuan is undervalued. What does that force the Chinese central bank to do? Explain your logic.

7) (24 points) Answer EITHER Part A OR Part B.

A) Suppose the government spends $500 per year, makes transfers of $450 - 1% of GDP per year, and pays $110 of interest per year. The tax revenue is 20% of GDP. If GDP is $4500, then how much is the government deficit or surplus. Suppose the full-employment level GDP is $5500. How much is the full-employment deficit or surplus? What is the primary deficit or surplus? Show all calculations. Is the government doing good fiscal policy? Explain your logic.

B) Given the side-effects of taxes, would a head tax (everybody pays the same amount for their head) or an income tax be a better tax? Only examine them from the views of economic incentives, not from an equity point of view, nor from a total revenue point of view. Using the same criterium, would a sales tax on food or a property tax be a better tax? Explain your logic.

8) (24 points) Answer EITHER Part A OR Part B.

A) Draw the Neo-Classical (Rational Expectations) diagram for the SRAS/LRAS/AD diagram. Illustrate the effects of the money supply increasing 4% while the people expected the money supply to increase 6%. Explain why the curve(s) moved as drawn. What happens to the unemployment rate, inflation rate, and GDP?

B) Draw the Phillips Curve diagram with expected inflation of 3% and unemployment of 7%. State how your diagram shows those two numbers. Illustrate the effects of the money supply increasing 4% while the people expected the money supply to increase 6%. Explain why the curve(s) moved as drawn. What happens to the unemployment rate and the inflation rate?

9) (24 points) For EITHER the Neo-Classical OR the Neo-Keynesian explanation of the business cycle, what statistic do they predict the cyclicality wrong? Use a graph to show how they reached their conclusion. How do they explain the fact that their predictions are wrong?

10 (26 points each) Answer THREE of the following using the Excel file final.xlsx.

A) Use the data on Tab A to forecast through the end of the year. Make sure you put seasonality into your forecast.

B) Use the data in Tab B to run a regression. So the quick tests for multicolinearity, heteroscedasticity, and autocorrelation. Tell me what the three results are and how you found them. Do NOT worry about solving them or doing the formal test.

C) Suppose the economy is described by $C_t = 200 + .9*[$(average of Y_t, Y_{t-1}, and Y_{t-2}) - $T_t]$, $T_t = .2Y_t$, $I_t = .3(Y_t - Y_{t-1})$, $G_t = 600$, $X_t = 400 - .02Y_t$. Write the equations and solve them for Y_t as a function of past variables and exogenous variables. How much is the short-run government spending multiplier? State how you got that. Put the equation into Tab C and use it to find GDP over the next 40 years if GDP from the past two years was 1500 last year and 1400 two years ago. Plot GDP over time.

D) Use the data on Tab D1 to calculate CPI, Paasche, and the PCE with 2014 as the base year. Calculate the inflation rate for all years possible. Use the data in Tab D2 to forecast the number of runs the Pittsburgh Pirates will score each game until May 19th. Use the same value, same change, same percent change, 7 game moving average, and 4 game weighted moving average.