

Write your name on the cover of the test booklet, on the worksheet “name” of the computer file you submit to me and nowhere else. Enclose this sheet with the booklet. E-mail the Excel file to me at my Bethany account, [wcsaplar@bethanywv.edu](mailto:wcsaplar@bethanywv.edu). 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 16-point question should take 8 minutes. However, you will be allowed the full two hours of the lab time.

1) (8 points) Use the data for quantity, price, and income from the page “[data 1](#)” to determine if there is a problem with multi-collinearity of the independent variables, P and I. Write an explanation of how you reached your conclusion.

2) Do ALL THREE parts.

2A) (10 points) Use the data for quantity, price, and income from the page “[data 1](#)” to run a regression to determine the quantity demanded as a function of price and income. Write out the resulting demand function.

2B) (10 points) Does data have problem of autocorrelation? How can you tell?

2C) (10 points) One possible solution to autocorrelation is to change the format of the function. If the demand curve is of the form  $Q = I/P$ , then we can take the natural log of all variables and estimate the equation  $\ln(Q) = \alpha + \beta_p \ln(P) + \beta_i \ln(I)$ . Run a regression to estimate that equation. (I have already calculated the natural logs in “[data 2](#).”) Is this regression more accurate than the one in part A? Explain your logic.

3) (10 points) Do EITHER part A OR part B.

A) What is meant by the “average workweek”? Explain why economists monitor it.

B) What is the labor force participation rate? What happens to it during a recession? Why does that occur?

4) (12 points) Do EITHER part A OR part B.

A) The autonomous expenditure multiplier assumes what about interest rates? In the real world, that assumption is false. Is the real world multiplier larger or smaller than the one the model predicts?

Explain your logic.

B) Explain why the equation,  $I = \alpha_2 + \beta_2 Y - \gamma_2 R$ , assumes that an increase in Y will increase I and an increase in R will decrease I.

5) (18 points) Suppose that the economy is described by the following equations:

$$C = 100 + 0.8(Y-T)$$

$$I = 75 + 0.2Y - 1000R$$

$$G = \alpha_3 = 25$$

$$X - M = 300 - 0.3Y$$

$$T = 0.25Y.$$

Derive the autonomous expenditure multiplier by finding  $\partial Y / \partial \alpha_3$ . Derive the equation for the IS curve.

6) (22 points) Do EITHER Part A OR Part B.

A) Draw an IS/LM diagram that has investment sensitive to interest rates and money demand sensitive to GDP. Explain why the curves look as you drew them. Is fiscal policy going to be effective? Explain your logic.

B) Draw an IS/LM diagram that has a small autonomous expenditure multiplier and money demand is sensitive to interest rates. Explain why the curves look as you drew them. Is monetary policy going to be effective? Explain your logic.