Problem Set 4

ECON 304 – Intermediate Macroeconomics

Sean Callahan
Department of Economics • Fall 2025

2025-12-03

Assignment Information

Due Date: December 10, 2025
Percent of Final Grade: 6.0 %
Student Name: _____
Instructions: Show all work clearly. Partial credit may be awarded for correct methodology even if the final answer is incorrect. Groups of no more than three are permitted.

Submission Instructions

1. Show all mathematical work clearly
2. Include graphs where requested
3. Explain economic intuition behind your answers
4. Submit by **December 10, 2025** at the beginning of class.
5. Late submissions will be penalized 10% per day

Office Hours: Wednesday, 12:00-2:00 PM; Friday, 12:00-1:00 PM; or by appointment

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Problem 1: Eliminating a Trade Deficit

Points: 40

Question 1

Points: 20

Consider an economy with a trade deficit ($NX < 0$) and with output equal to its natural level. Suppose that, even though output may deviate from its natural level in the short run, it returns to its natural level in the medium run. Assume that the natural level is unaffected by the real exchange rate. What must happen to the real exchange rate over the medium run to eliminate the trade deficit (i.e., to increase NX to 0)?

Your answer should discuss how the real exchange rate ε effects exports and imports. Make use of derivatives

Question 2

Points: 20

Now write down the national income identity. Assume again that output returns to its natural level in the medium run. If NX increases to 0, what must happen to domestic demand ($C + I + G$) in the medium run? What government policies are available to reduce domestic demand in the medium run? Identify which components of domestic demand each of these policies affects.

Problem 2: Policy Coordination and the World Economy

Points: 60

Consider an open economy in which the real exchange rate is fixed and equal to one. Consumption, investment, government spending, and taxes are given by

$$\begin{aligned} C &= 10 + 0.8(Y - T) \\ I &= 10 \\ G &= T = 10 \end{aligned}$$

Imports and exports are given by

$$\begin{aligned} IM &= 0.3Y \\ X &= 0.3Y_F \end{aligned}$$

where Y_F denotes foreign output.

Question 1

Points: 12

Solve for equilibrium output in the domestic economy, given Y_F. What is the multiplier in this economy? If we were to close the economy—so that exports and imports were identically equal to zero—what would the multiplier be? Why would the multiplier be different in a closed economy?

Question 2

Points: 12

Assume that the foreign economy is characterized by the same equations as the domestic economy. Use the two sets of equations to solve for the equilibrium output of each country. (Hint: Use the equations for the foreign economy to solve for Y_F as a function of Y and substitute this solution for Y_F in part a.) What is the multiplier for each country now? Why is it different from the open economy multiplier in part a?

Question 3

Points: 12

Assume that the domestic government, G, has a target level of output of 125. Assuming that the foreign government does not change G_F, what is the increase in G necessary to achieve the target output in the domestic economy? Solve for net exports and the budget deficit in each country.

Question 4

Points: 12

Suppose each government has a target level of output of 125 and that each government increases government spending by the same amount. What is the common increase in G and G_F necessary to achieve the target output in both countries? Solve for net exports and the budget deficit in each country.

Question 5

Points: 12

Why is fiscal coordination, such as the common increase in G and G_F in part d, difficult to achieve in practice?