

ECON 1550

Spring 2026

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Submission: [Canvas](#) or [Gradescope](#)

Problem Set 7

Due: April 1, 2026 at 11:59pm ET

Instructions

- When submitting to Gradescope, indicate the page where each question is answered to avoid a 5-point deduction.
- Full credit is given for correct answers. If multiple steps are needed, you must show them to get full credit.
- Points are shown for each part. Partial credit is given for partially correct answers; show your work to maximize it.
- Late submissions receive a score of zero.
- If you have technical problems submitting, email your work to the Head TA before the deadline.
- Collaboration with classmates is encouraged; use of generative AI is permitted but discouraged.
- You must write, understand, and submit your solutions individually. Copying other students' or AI-generated answers, even fragments, is not allowed.

1. Chapter 6: Output and the Exchange Rate in the Short Run (20 points)

The following questions analyze fiscal and monetary policy using the *AA-DD* model.

- (a) [5 points] If a government initially has a balanced budget but then cuts taxes, it is running a deficit. Suppose the government finances its deficit by printing the extra money it now needs to cover its expenditures, that is, by increasing the money supply enough to finance the deficit. Assume that the tax cuts and the increase in the money supply are both temporary and occur at the same time. According to the *AA-DD* model, how does the nominal exchange rate respond to this simultaneous change in taxes and money supply in the short run?
- (b) [5 points] A new government is elected and announces that once it is inaugurated, it will permanently increase the money supply. Use the *AA-DD* model to study the economy's response at the moment the announcement is made. Do not analyze what happens later, when the new government is inaugurated and the policy is implemented.

During the last few years, and especially after the COVID-19 pandemic, there have been many calls to “buy American”. Imagine the government implements a “buy American” program in which any new government spending is constrained to only purchase domestic goods. Use the *AA-DD* model to answer the following questions:

- (c) [5 points] Does a *permanent* increase in U.S. government spending constrained by “buy American” restrictions have a bigger effect on U.S. output than unconstrained U.S. government spending? Why or why not? Make sure you consider both the short and long run effects on output.
- (d) [5 points] Now assume the government spending is temporary. Do “buy American” restrictions have a bigger effect on U.S. output than unconstrained U.S. government spending? Why or why not? Make sure you consider both the short and long run effects on output.

2. Import Tariffs in the AA-DD Model (80 points)

Use the standard AA-DD model from class and from the textbook, with the following functional forms:

$$C(Y - T) = \frac{1}{2}(Y - T),$$

$$EX(q, Y^*) = \frac{1}{4} + \frac{1}{10}q + \frac{1}{10}(Y^* - 1),$$

$$IM(q, Y - T) = \frac{5 + 2(Y - T)}{20} - \frac{1}{10}q,$$

$$L(R, Y) = \frac{Y}{1 + R}.$$

Throughout this question, use

$$T = 0, \quad I = \frac{1}{5}, \quad G = \frac{1}{5}, \quad M^s = 1, \quad P^* = 1, \quad R^* = 0, \quad Y^* = 1.$$

It will also be useful to write imports as

$$IM(q, Y - T) = qV(q, Y - T),$$

where

$$V(q, Y - T) = \frac{5 + 2(Y - T)}{20q} - \frac{1}{10}$$

is the volume of imports measured in units of foreign goods.

- (a) [7 points] Explain the price effect and the volume effect of an increase in q on imports. Then, using the functional forms and values given above, verify that the volume effect dominates.
- (b) [7 points] Derive the DD curve explicitly. Explain what points on the DD curve represent. In a graph with E on the vertical axis and Y on the horizontal axis, is the DD curve increasing or decreasing? Give intuition.
- (c) [7 points] Repeat part (b) for the AA curve.

For the remaining parts of the question, add a Phillips curve:

$$\pi = \pi^e + \alpha(Y - Y^f),$$

where π is inflation, π^e is expected inflation, α is the slope, and Y^f is full-employment output. Set $\pi^e = 0$, $\alpha = 1$, and $Y^f = 1$.

- (d) [7 points] Solve for the initial long-run equilibrium.

Now add an exogenous *ad valorem* (proportional) import tariff τ . The tariff raises the domestic-currency price of imported goods from q to $(1 + \tau)q$ in the volume of imports:

$$IM(q, \tau, Y - T) = qV((1 + \tau)q, Y - T).$$

Treat tariff revenue as negligible so that T and G remain unchanged.

- (e) [7 points] Keeping the real exchange rate, output, and taxes fixed, does a higher tariff lead to a higher or a lower current account? Explain why.
- (f) [7 points] Find the DD curve when the tariff is present. How do tariffs change the DD curve? Comment on both the slope and the intercept. Give intuition.
- (g) [7 points] Find the AA curve. How do tariffs change the AA curve? Give intuition. Hint: The AA curve is not a straight line, so you don't need to talk about its slope and intercept. A qualitative explanation, or a sketch of the AA curve before and after the tariff is imposed, is enough.
- (h) [8 points] Consider a temporary increase in the tariff from 0 to $1/3$ in the short run, and a return to zero tariffs $\tau = 0$ immediately after and in the long run. Sketch in an AA-DD diagram the initial equilibrium, the short-run equilibrium, the long-run equilibrium, and the transition from the short run back to the long run. A qualitatively correct sketch is enough. Explain in words how and why the curves shift, or do not shift, at each point in time.

- (i) [7 points] Plot the time paths of E , q , Y , P , π , CA , EX , and IM for the temporary tariff increase. A qualitatively correct path is enough.
- (j) [8 points] Repeat part (h) for a permanent increase in the tariff that changes it from 0 to $1/3$ in the short run, the long run, and the transition between the short run and the long run.
- (k) [8 points] Repeat part (i) for the permanent tariff increase.