Final Exam. Econ520. Spring 2024

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UNC

Instructions:

- Answer all questions.
- Write legibly.
- Write your answers on the question sheets. Use additional pages, if needed.
- *Explain* your answers – do not just state them.
- *Show* your derivations – do not just state the final result.
- Do not refer to any notes or books. You may use a calculator.
- The total time is **180** minutes. The total number of points is **120**.

Name:	PID:

1 Short Questions: Closed Economy

Be sure to explain your answers. No models are required.

1. [10 points] New Zealand at some point required its Central Bank to achieve **2 percent inflation on average** over any period of several years. Suppose that the Central Bank wants to stimulate output by temporarily raising inflation. Explain how the 2 percent requirement makes this task easier. Hint: What does the requirement do to the Phillips Curve?

   Answer

   The relevant concept here is the Phillips Curve $\pi = \pi^e + z + m - \alpha u$. The Central Bank wants to move along the PC (change π to affect u). This works if the PC does not shift, i.e., if inflation expectations are well anchored.

   The law could help to anchor inflation expectations at 2 percent. It removes the concern that, in response to shocks, the Central Bank may abandon or revise its target.

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2. [10 points] Explain why **"r versus g"** is important for how much debt a government can afford to take on. Here, r is the real interest rate and g is the growth rate of the economy.

   Answer

   The main constraint on the government's ability to take on debt is the path of the **ratio of interest payments to output** (the tax base). If interest payments grow faster than the tax base, the government will eventually not be able to pay.

   The key insight is now: if the government never pays any interest (rolls over all of its debts and interest into new bonds), debt grows at rate r.

   Therefore, if $r > g$, a government that rolls over all of its debts eventually runs out of funds. Some part of the interest has to be paid out of tax revenues. I.e., the government has to run primary surpluses. The larger the debt, the higher the surpluses it must run (the less funds are available for government consumption and transfers).

   However, if $r < g$, the government can roll over all of its debts. In principle, the government can take on unlimited amounts of debt because it never makes any payments (that are not financed by issuing more debt). In practice, the interest burden is no longer a limiting factor for how much the government can borrow.

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3. [10 points] Divided countries are **Natural Experiments** that support the importance of institutions for cross-country income differences. What is a natural experiment? What has to be true for causal inference (institutions cause income gaps) to be valid?

   Answer

A Natural Experiment is similar to a human controlled experiment. It "randomly" assigns different treatments to different groups of (say) countries.

Example: Divided countries with different institutions (North vs South Korea).

Why useful: The challenge in establishing cause and effect is omitted variables. Institutions and productivity may be correlated, but it is not clear that institutions cause productivity. Instead, an omitted variable may cause both. Natural experiments "solve" this problem as long as the treatment (dividing the country) is random (not related to other factors that affect productivity).

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2 Short Questions: Open Economy [50]

Be sure to explain your answers. No models are required.

1. [10 points] Explain the logic of this quote: "A current account deficit may indicate that a country offers sound investment opportunities, or it may be caused by ... fiscal deficits." (Economic Report of the President, 2013, p. 213).

   Answer

   The key relationship is $NX = S^{private} + S^{public} - I$.

   Given the private saving rate, a trade deficit must either mean that S^{public} is low (fiscal deficits) or that investment is high.

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2. [10 points] Comment on the following statement: "When the U.S. trade deficit rises, we lose jobs to other countries and U.S. employment falls." Think of this as a statement about the medium run.

   Answer

   The statement suffers from a logic problem: the trade deficit is itself and outcome (an endogenous variable). The trade deficit does not cause anything. The causes of the trade deficit would be to blame.

   In addition, the statement is false. Medium run employment is determined by supply factors (preferences, productivity or real wages, work incentives), not by demand factors. The trade deficit, by contrast, is determined by domestic saving and investment (demand factors).

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3. [10 points] Countries that **fix their exchange rates** tend to experience volatile interest rates and inflation. Explain why this happens.

Answer

With fixed exchange rates, any shock that affects currency demand has to be offset by monetary policy. For example, if the risk premium for the home currency rises, the Fed has to prevent depreciation by buying dollars and raising the domestic interest rate. The monetary contraction causes prices to fall. Similarly, any shocks to the foreign economy that cause capital flows need to be offset in the same way.

The implication is that the Fed needs to constantly adjust monetary policy, which implies volatile inflation and interest rates.

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4. [10 points] Suppose you could **open up trade** with one of two countries. Country A is half as productive in making all goods compared with the U.S. Country B is twice as productive in making good X, but three times as productive as the US in making good Y. Which country would you want to be able to trade with? What would happen to domestic prices and wages when trade opens?

Answer

This is about comparative advantage. Opening up trade with A would not do anything. Relative prices in A are the same as relative prices in the US. There would be no trade. Opening up trade with B would be more beneficial (setting aside distributional concerns). B could export the good where it has a comparative advantage (Y).

When trade opens, the real wage in sector X would not change. Let's make good X the numeraire, so it's price is 1. Good Y would then become cheaper (imported). Overall real wages would rise.

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5. [10 points] **Dumping** is not permitted under international trade rules. Viewed through the lens of our two good / two country model, how would foreign dumping affect the home economy? In light of this finding, why do you think dumping is not permitted? Note: Dumping means selling goods abroad for less than they cost at home. It is essentially an export subsidy.

Answer

From our perspective, dumping has the same effect as foreign productivity growth: the price of export goods falls in the foreign country.

If dumping affects the goods where the foreign country has comparative advantage, we benefit. Our production does not change. The domestic real wage in terms of the goods that we produce does not change (it is determined by domestic productivity). Dumping simply means that the same quantity of exports buys more imports.

Why then is dumping not permitted? Dumping usually occurs in industries where the foreign country does not have a comparative advantage, but wants to gain one. The goal is to put

the foreign competitors out of business and let the domestic firms learn how to produce efficiently (and to get them market power). This kind of dumping is not permitted because it reduces competition in the long run.

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3 Floating E: Dumping

Consider how foreign dumping affects the domestic economy under floating exchange rates. The model equations are:

IS:

$$Y = C\left(Y - T\right) + I\left(Y, i\right) + G + NX\left(Y, Y^*, \frac{P}{EP^*}\right) \tag{1}$$

LM:

$$M/P = Y \times L\left(i\right) \tag{2}$$

AS:

$$Y = F\left(\frac{P}{P^e}\frac{1}{1+m}, z\right) \tag{3}$$

UIP:

$$E = E^e\frac{1+i^*}{1+i} \tag{4}$$

Recall that we combine IS + LM + UIP into AD:

$$Y = C\left(Y - T\right) + I\left(Y, \hat{L}\left(\frac{M}{PY}\right)\right) + G + NX\left(Y, Y^*, \frac{P}{E^eP^*}\frac{1+\hat{L}\left(\frac{M}{PY}\right)}{1+i^*}\right) \tag{5}$$

Questions

1. [10 points] In an AS/AD diagram, **graph** how foreign dumping affects the short-run and medium-run equilibrium. Dumping may be modeled as a **drop in foreign prices** P^*.
   This sub-question just asks for the graph. What happens "under the hood" is the subject of the next few sub-questions.
   Be sure to explain how the curves that you draw shift and why. Clearly mark the short and medium run equilibrium.

   Answer

   This is a standard AS/AD diagram. Dumping shifts the AD curve left or down. Ceteris paribus, lower foreign prices reduce NX. The SR equilibrium has lower Y and P. The MR equilibrium has even lower P but unchanged $Y = Y_n$.

2. [13 points] Derive what happens in the **medium run** to output, prices, consumption, investment, the exchange rate, and net exports. Be sure to follow the model's logic and support your conclusions with the model equations.
   Explain in words why foreign dumping worsens our trade balance. How do you reconcile this

finding with the notion that policies only affect the trade balance if they change domestic saving or investment?

Answer

MR: $Y = Y_n$ and $P \downarrow$ from the graph.

Interest rate: $\frac{M}{PY} \uparrow = L(i \downarrow)$.

Therefore C unchanged, $I \uparrow$ and $E \uparrow$ (dollar depreciates; by UIP).

Trade balance: $NX \downarrow$ to satisfy $Y = C + I + G + NX$.

In words: the trade balance improves b/c foreign goods get cheaper in world markets. Some of the direct effects of the dumping are offset by changing prices ($P \downarrow$ and $E \uparrow$ counteract $P^* \downarrow$). But those equilibrium effects are not enough to fully undo the shock.

The finding is consistent with the idea that shocks only affect the trade balance if they change saving or investment. Here, the shock hits investment by lowering i. This is probably not a realistic feature of the model, but it depends on how the Fed reacts.

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3. [7 points] Derive what happens in the **short run** to the same variables.

Answer

SR: $Y \downarrow$ and $P \downarrow$ from the graph.

Interest rate: $\frac{M}{PY} \uparrow = L(i \downarrow)$.

Therefore I ambiguous, $C \downarrow$, and $E \uparrow$ (dollar depreciates).

The trade balance looks ambiguous. $Y = C + I + G + NX$ is not conclusive. And the shock pushes $NX \downarrow$ while the equilibrium effects ($Y \downarrow, P \downarrow, E \uparrow$) all push the other way. Of course, for the model to "make sense," NX should be down (otherwise AD would not shift left).

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4. [10 points] Explain how full employment gets restored during the transition from the SR to the MR. Where does the additional demand come from?

Answer

Since SR $Y < Y_n$, price expectations start to fall. That reduces wages and allows firms to reduce prices.

Lower prices directly improve the trade balance. This is the first source of additional demand.

Lower prices also raise M/P. To clear the money market, i must fall. (Note: strictly speaking, the change in i during the transition is ambiguous, but let's not get into that complication...). Lower i causes dollar depreciation, which further improves NX. Lower i also crowds in investment.

End of exam.