Exam 3. Econ520. Fall 2025

Professor Lutz Hendricks
UNC, Department of Economics

Instructions

- Answer all questions.
- **Write legibly**. I cannot grade what I cannot read.
- 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 **100**.

Name	PID

1. Short Questions

1. (15 points) Explain the **intuition** why **tariffs** fail to improve the trade balance in the medium run with floating exchange rates. Be sure to explain what adjustments take place that make foreign goods "competitive" again.

Answer: (Answer by Claude Sonnet 4.5) The key mechanism is exchange rate adjustment.

Initial impact of the tariff:

A tariff raises the price of imports. Domestic consumers buy fewer foreign goods. Import demand falls.

Exchange rate response:

With lower imports, there's less demand for foreign currency. The domestic currency appreciates (strengthens). This is automatic under floating rates.

The appreciation restores competitiveness:

When the domestic currency strengthens, two things happen:

1. **Imports become cheaper again.** The tariff raised import prices, but the stronger currency lowers them. Foreign goods cost fewer dollars (or whatever the domestic currency is). This partially or fully offsets the tariff.
2. **Exports become more expensive.** Domestic goods now cost more in foreign currency. Foreigners buy less. Exports fall.

The net result:

The trade balance returns to roughly where it started. Imports don't fall much (currency appreciation offset the tariff). Exports fall (currency appreciation hurt competitiveness).

Why does this happen?

The **key, general intuition** is this: The trade balance is fundamentally determined by saving and investment, not by trade policy. If national saving minus investment doesn't change, the trade balance won't change. The exchange rate adjusts to enforce this equilibrium.

The tariff redistributes production between sectors (toward import-competing industries), but it doesn't improve the overall trade balance in the medium run.

2. (15 points) Explain in words why the central bank loses control over the money supply under fixed exchange rates. What would happen if the central bank tried to change the money supply?

Answer: (Answer by Claude Sonnet 4.5) Under fixed exchange rates, the central bank must intervene in foreign exchange markets to maintain the peg. This commitment directly constrains money supply control.

Here's the mechanism. Suppose the central bank tries to expand the money supply through open market operations. It buys domestic bonds and creates new money. Interest rates fall. Capital flows out as investors seek higher returns abroad.

The capital outflow creates excess demand for foreign currency. People want to exchange domestic currency for foreign currency at the pegged rate. The exchange rate threatens to depreciate.

To maintain the fixed rate, the central bank must sell foreign reserves and buy domestic currency. This removes the exact amount of domestic currency that was initially created. The money supply returns to its original level.

The reverse happens with contractionary policy. The central bank sells bonds and reduces money supply. Interest rates rise. Capital flows in. People want domestic currency. The exchange rate threatens to appreciate. The central bank must buy foreign reserves with domestic currency. This adds back the money supply that was removed.

The result: any attempted change in money supply is automatically offset by foreign exchange intervention. The central bank can choose the exchange rate or the money supply, but not both. Under a fixed exchange rate regime, the money supply becomes endogenous. It adjusts to whatever level is consistent with maintaining the peg.

This is the core of the impossible trinity. A country cannot simultaneously have a fixed exchange rate, free capital flows, and independent monetary policy.

3. (15 points) Evaluate the economic logic underlying the following statement by Treasury Secretary Scott Bessent (as summarized by Peter Coy, NY Times Dec 6, 2024):
"Bessent also told Green that China can accomplish its military buildup only because it has a gigantic [current account] surplus … 'If they didn't do the gigantic current account surplus, the savings of the Chinese people are not enough to finance this,' he said."
Note: When answering this question, treat the current account surplus as the same as the trade surplus.

Answer: (Answer by Claude Sonnet 4.5) This statement contains a fundamental macroeconomic error.

The Accounting Identity

The current account equals national savings minus domestic investment: CA = S - I

A current account surplus means China saves more than it invests domestically. China lends the excess abroad.

The Error

Military spending is part of government spending. It uses domestic resources. The current account surplus represents resources sent **abroad**, not resources available domestically.

If anything, the logic is backwards. A **smaller** current account surplus would mean more resources devoted to domestic uses, including potential military spending.

What Actually Matters

China's ability to finance military spending depends on:
- Tax revenue
- Government borrowing capacity
- The real resources available in the economy

China's high national savings rate enables **both**:
- A large current account surplus (lending abroad)
- Domestic spending including military expenditures

The surplus doesn't "finance" military spending. Both are consequences of high savings.

The Bottom Line

Chinese domestic savings are sufficient to finance both significant domestic investment and a large current account surplus. These same savings can certainly finance military spending, which is simply part of domestic absorption. The current account surplus, if anything, represents resources that could have been used domestically but weren't.

Bessent appears to confuse the current account balance with government budget financing. These are distinct concepts.

4. (15 points) Evaluate the economic logic underlying the following claim about trade deficits and job losses:
"While growing exports tend to support domestic employment, growing imports costs jobs and reduces domestic output. Thus, the size and growth of trade deficits is strongly correlated with trade-related job loss." – NY Times 2016
Your comment should use our AS/AD model as the frame of reference. But you are not expected to work out the model solution. Interpret the claim as referring to the medium run.

Answer: The author basically says that trade deficits reduce domestic employment. The logic is very simple. If we produced all the imported goods at home, more labor would be needed.
The claim is not logically coherent. The trade deficit is an endogenous outcome. It does not make sense that one endogenous outcome causes another.
The model implies that demand shocks that create trade deficits, such as increases in G, do not affect medium run employment. Employment is determined by supply factors, such as worker preferences, labor market institutions, and real wages.

2. Foreign Productivity Growth

Suppose that productivity growth in China **lowers the global price** of traded goods. For a small open economy that fixes its exchange rate against the Chinese currency, trace the effects through the AS/AD model. Illustrate your answer in an AS/AD **diagram**.
Explain the changes in domestic consumption, investment, net exports, and the money supply.
Take all other foreign variables $(Y^\star, i^\star)$ as fixed.
Recall the model equations:

$$UIP : i = i^\star$$

$$LM : M/P = Y \times L(i)$$

$$AD : Y = C(Y - T) + I(Y, i) + G + NX\big(Y, Y^\star, P/\overline{E}P^\star\big)$$

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

Questions:

1. (20 points) Graph and explain the **medium-run** effects. Provide intuition for the changes. Be sure to explain what happens to net exports.

   Answer: This is essentially the reverse of a tariff. Lower $P^\star$ reduces NX, shifting AD left.
   In the medium run, equilibrium is determined by MR-AS and AD. Hence $Y = Y_n$ is unchanged and $P \downarrow$.
   $C(Y_n - T)$ is unchanged. $i = i^\star$ to fix the exchange rate. $M \downarrow$ to clear the money market.
   $I(Y_n, i^\star)$ is unchanged. To clear the goods market, NX also unchanged.
   Intuitively, we remove demand from the domestic economy. Prices fall. That lowers i, but the Fed prevents that from happening by reducing M. Prices keep falling until AD is again at full employment (which is where supply eventually comes out). Falling prices restore net exports.
   In our model, we don't have a labor supply effect that comes from rising real wages as $P^\star$ falls.

2. (20 points) Now suppose the Fed lets the exchange rate float instead, so that the UIP equation is replaced by $i = i^\star + x$. The AD curve may now be written as

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

   How do the medium-run outcomes compare with the fixed exchange rate case?
   What if the Fed keeps i fixed by adjusting M?

   Answer: We still have a negative AD shock. The graph looks like the fixed E case. In the medium run, $Y = Y_n$ and $P \downarrow$. Hence, C unchanged. From LM, we have $i \downarrow$, so that $I \uparrow$. Goods market clearing requires that $NX \downarrow$. The lower i causes the dollar to depreciate.
   The difference comes from the change in i, which is a bit unrealistic (as we discussed in the tariff application).
   If the Fed fixes i, the floating and the fixed case are exactly the same.

End of exam