Part One

Answer whether the following statements are true or false. In the Final, you will see 40 true/false questions with 0.5 point each. In short, Part One will be worth 20 points. 20 percent comes from Chapters 12-16 and 80 percent from Chapters 17-18 and 20-22.

Chapters 12-16

1. According to current account identity, countries that face government budget deficit also have current account deficit.

   ANSWER: False. Current account identity: \( CA = (\text{private savings} - \text{investment}) + (\text{tax revenue} - \text{government spending}) \). Even when tax revenue is less than government spending, \( CA \) may be surplus if private savings is much larger than investment.

2. Exchange rate overshooting arises because the foreign exchange market participants overreact to news.

   ANSWER: False. Exchange rate overshooting arises because of price stickiness and market participants act rationally.

3. China currently fixes its exchange rate with U.S. dollar. The purchasing power parity then implies that Chinese inflation rate is the same as that in the U.S.

   ANSWER: True. The relative purchasing power parity states that home inflation is the same as foreign inflation plus the expected depreciation. In general, the expected depreciation at any moment in time is zero when a country has fixed exchange rate for a very long time. So inflation in China is supposed to be the same as that in the U.S. in theory.
4. According to the aggregate demand theory, increase in investment demand makes exchange rate appreciate.

ANSWER: True. An increase in investment increases in aggregate demand (Y), and that will increase money demand (L(R,Y)). For a given level of money supply, the increase in money demand will make interest rate (R) rise. As a result, the exchange rate will appreciate. This can be illustrate easily by using the AA-DD framework, or the foreign-exchange-market- and-money-market diagram.

Chapters 17-18 and 20-22

5. Fiscal policy is more effective with fixed exchange rate regime than with flexible exchange rate regime.

ANSWER: True. This can be illustrated easily with the AA-DD framework. Under flexible exchange rate regime, an expansionary fiscal policy will make output and interest rate rise, and that will cause exchange rate to appreciate. But with fixed exchange rate, the central bank has to intervene by buying foreign assets and that will increase money supply. In other words, the foreign exchange market intervention creates an expansionary monetary policy which further expands the output in the short run.

6. Under fixed exchange rate regime, appreciation pressure on exchange rate will results in capital inflows.

ANSWER: True. Appreciation pressures will force the central bank to intervene by buying foreign assets. This is equivalent to experiencing capital inflows that results in an expansion of money supply.

7. Sterilized intervention does not alter exchange rate because it does not change money supply and interest rate.

ANSWER: False. Sterilized intervention can change exchange rate when assets are imperfect substitutes and risk premium is not zero.

8. When a central bank purchases domestic bonds, the risk premium on the domestic bonds rises.

ANSWER: False. The central bank’s action reduces the stock of domestic bonds held by the private sector, so the risk premium on the domestic bonds falls.

9. Recently the U.S. budget deficit has expanded and been financed by new issues of treasury bills. The theory predicts that the risk premium on treasury bills will rise.

ANSWER: True. Risk premium is increasing in the supply of domestic bonds.
10. The money supply at the time of balance-of-payments crisis rises sharply because of the expansion of domestic credit.

   ANSWER: False. At the time of balance-of-payments crisis, money supply falls sharply because of the capital flight or the abrupt loss of foreign exchange reserves.

11. The impossible trinity suggests that a central bank can prevent a balance-of-payments crisis by limiting the cross-border flows of capital.

   ANSWER: True. The impossible trinity states that a central bank can achieve only 2 out of the following 3 goals: 1) fixed exchange rate; 2) independent monetary policy; and 3) perfect capital mobility. So, a central bank can choose to give up the goal number 3 and continue to fix exchange rate.

12. According to the price-specie-flow mechanism, gold outflows will cause the price to fall.

   ANSWER: True. Gold outflows will result in a fall in money supply, which will bring the price level down.

13. The price-specie-flow mechanism is the unique mechanism of the gold standard and does not exist under the silver standard.

   ANSWER: False. The price-specie-flow mechanism works with any “specie” or precious metal standard.

14. Returning to the gold standard after the World War I resulted in worldwide deflation because the gold price in terms of U.S. dollar fell.

   ANSWER: False. It is true that returning to the gold standard caused worldwide deflation. But the reasoning is incorrect. Deflation occurred because returning to the gold standard - or keeping the gold price in terms of U.S. dollar - required central banks to reduce money supply.

15. The optimal level of the current account cannot be achieved in the short run without an adjustment in exchange rate.

   ANSWER: True. Fiscal policy can only bring the internal balance, but it alone cannot bring the external balance.

16. The European Union suffers with the N-1 Problem because Germany is the reserve currency country.

   ANSWER: False. Germany is not the center country because the EU has replaced Deutsch Mark with the euro as the reserve currency.
17. Before the emergence of the euro, the European Union fixed their exchange rate with German currency, the Mark. In that period, Germany did not suffer economic stability loss as much as other member countries.

**ANSWER:** True. At the time, Germany functioned as the center country so its central bank still enjoyed the monetary independence unlike other central banks.

18. Based on the theory of optimum currency area, Italy benefits from joining the euro zone more than Germany because it has higher inflation.

**ANSWER:** False. It is not clear who benefits more. Inflation reduction is only one of the many possible benefits. Germany also benefit from reducing exchange rate risks involved in financial and current transactions.

19. The euro zone should encourage free labor mobility to increase the gain from forming a currency union.

**ANSWER:** True. Labor mobility has a stabilizing effect in the short run. So, labor mobility will reduce the economic stability loss, or increase the potential gain from joining a currency union.

20. Adding new member countries to the euro zone will increase the gain from forming a currency union.

**ANSWER:** False. It depends. Adding new member countries will increase the benefits only when these countries meet the criteria set by the theory of optimum currency area.

**Part Two**

Answer the following questions. Depict appropriate diagrams as required. In the Final, Part Two will be worth 20 points. You will see 4 essay questions with 5 points each.

1. Assume a fixed exchange rate policy, using the AA-DD model to explain the effects of import tariffs on output. How will your answer change if exchange rate is flexible? Show also the central bank’s balance sheet in each case.

**ANSWER:** Tariffs reduce the import demand so it increases the current account surplus and aggregate demand. It has the same effect as tax cut, so it shifts the DD curve in Figure 1 to the right and creates an appreciation pressure. The equilibrium will move from Point 1 to Point 2 if the central bank does not do anything. However, under fixed exchange rate regime, the central bank has to intervene by buying foreign assets and money supply will increase. This will shift the AA curve to the right and further expand output. Point 3 will constitute the equilibrium under fixed exchange rate regime. However, if exchange rate is flexible, the central bank does nothing
and we will observe a smaller expansion of output and exchange rate appreciation at Point 2.

The effect of the import tariffs on the central bank balance sheet is illustrated in Figure 2. With fixed exchange rate policy, the foreign exchange market intervention will increase the foreign assets by $\Delta F$ and money supply by the same amount $\Delta M_s = \Delta F$. Central bank balance sheet will change only when central bank intervenes in foreign exchange market, so nothing happens with the balance sheet under flexible regime.

2. Recently 10 eastern European countries joined the European Union. Explain how these new countries will affect the optimality of the currency area using the GG-LL framework. What are the conditions for these countries to increase the benefits from joining the currency union?

ANSWER: In Figure 3, the GG curve summarizes the relation between economic integration in goods and factor markets and the monetary efficiency gain. In contrast, the LL curve summarizes the relation between economic integration and the economic stability loss. Suppose the GG and LL curves intersect at Point 1. Then $\Theta_1$ defines the critical level of economic integration, i.e. the minimum economic integration level that will make the currency area optimal (GG>LL). The 10 new member countries will increase the benefits from joining the currency union if they either shift the GG curve up (increase the gain) or shift the LL curve down (decrease the loss). That way the critical level of economic integration will drop. That way we will observe a larger area where GG>LL in Figure 3. The following conditions will make this happen.

- **Increase in similarity of economic structure**
  This will increase the chance that factors (workers and capital) can easily move across border from the countries in a recession to the booming countries. Such factor mobility has stabilizing effect in the short run, so it reduces the economic stability loss and shifts the LL curve down. The critical level of economic integration falls to $\Theta_2$

- **The new member countries trade a lot with the euro area**
  This will increase the efficiency gain as fixing exchange rate will remove a great deal of uncertainty involved in export and import. This shifts the GG curve up. The critical level of economic integration falls to $\Theta_3$

3. Suppose an investment project costs 50 million dollars. In the next period, with 1/4 of probability, it will pay 0 million dollars. With 3/4 of probability 60 million dollars. Supposed that this project will be funded by international bank loans. Calculate the expected profits, with and without government guarantee. Explain how the government guarantee creates a "moral hazard" problem.
ANSWER: Without guarantee, the expected profit is \((1/4)(0-50) + (3/4)(60-50)\) = \(-20/4 = -5\) million dollars. This project has negative expected profit so it will not get funded. With the government guarantee, the expected profit is \((1/4)(0) + (3/4)(60-50) = 30/4 = 7.25\) million dollars. So this project will get funded if the government guarantees the loans. In this case, the government creates a "moral hazard" problem because it makes the lender underestimate the risk or overestimate the economic benefit of the project. The government guarantee creates over-lending and over-investment. (Over-investment means that the investment observed exceeds the optimal level.)

4. Before the Asian financial crises, the crises countries maintained a de facto fixed exchange rate with the U.S. dollar. Many economists blamed the exchange rate policy as the cause of excessive borrowing from abroad before the financial crises. What is the rationale behind this claim? Explain using the uncovered interest parity.

ANSWER: The uncovered interest rate parity states that, abstract from the risk premium, the domestic interest rate must equal the foreign interest rate plus the expected rate of depreciation. The Asian crisis countries (Indonesia, Malaysia, Philippines, South Korea and Thailand) have maintained a fixed exchange rate with U.S. dollar for decades and that creates a belief that the expected depreciation is zero. As a result, the market interest rate in those countries is below the rate that would take into account the risk of devaluation. In short, the interest rate before the crises was lower because people underestimated the risk of devaluation, and that created strong incentives to borrow from abroad. The appetite for borrowing attracts a large sum of foreign capital to these economies in a form of bank loans, like what happened in Latin America in the 1970s.

The following questions are optional in Problem Set 5

5. What is the price-specie-flow mechanism? Explain how it works.

ANSWER: The price-specie-flow mechanism is the automatic short run adjustment mechanism under a metallic or bimetallic standard that helps restore the external balance. Consider the gold standard as an example. When a country accumulates current account surplus above its optimal level, it will experience gold inflows through trade as export becomes much larger than import. The gold inflows will lead to an expansion in money supply in the central bank’s balance sheet, and that will cause price level to increase. The increase in price will reduce the demand for domestic goods and increase the demand for foreign goods. We will observe an increase in import and a decrease in export, and eventually the external balance will be restored.

6. Explain how returning to the gold standard became a cause of the Great Depression.
ANSWER: During the WWI, many countries including the U.S. left the gold standard, to expand its money supply for war finance. Think about the central bank’s balance sheet, money supply = government bonds + gold stock. Before the war, money supply = $M_0$, government bonds = $B_0$ and gold stock = $F_0$. During the war, the central bank left the gold standard to let the government issue new bonds to finance the war. (Notice that we are doing this to finance the Iraq war as well.) During this period, central bank’s holding of the government bonds = $B_1$ and $B_1 > B_0$, while the gold stock is constant at $F_0$. So the money supply during the war is $M_1 = B_1 + F_0$. Since $B_1 > B_0$, then $M_1 > M_0$. After the war, to return to the gold standard, the central bank has to make the money supply the same as the level before the war, i.e. $M_0$. Since $M_1 > M_0$, the central bank has to reduce money supply by $M_1 - M_0$ and this has a contractionary effect on the economy as price level falls abruptly.

7. Explain the economic effects of the shutdown of gold-dollar exchanges by President Nixon in 1971.

ANSWER: When the gold-dollar exchange was shut down, the U.S. was no more obliged to fix the U.S. dollar with the gold. But the rest of the world still had to fix their national currency with U.S. dollar under the Bretton Woods agreement. As a result, the shutdown of the gold-dollar exchanges moved the international monetary system from the gold-exchange standard to the reserve-currency standard, where the U.S. dollar was the reserve currency. The U.S. effectively created the N-1 problem which allowed the U.S. to enjoy asymmetric independence in its conducts of monetary policy. The U.S. could freely expand its money supply while the rest of the world had to intervene in foreign exchange markets and import an expansion of money supply from the U.S.

8. Why did the Bretton Woods system (or the IMF) allow countries that experienced persistent current account deficit to devalue their currency?

ANSWER: Figure 18.3 in Page 555 in the textbook gives a good reason for this. In the short run, fiscal policy can help them to attain the internal balance by changing the level of demand of goods and services. For this reason, we call the effect on aggregate demand of fiscal policy “expenditure changing.” However, the domestic and foreign goods prices are fixed in the short run. We will not observe a switch of spending between domestic and foreign goods unless exchange rate changes. With a change in exchange rate, the relative price of the two goods will adjust right away even though prices in local currency are sticky. Such effects of exchange rate on expenditures on domestic and foreign goods are called “expenditure-switching” effects of exchange rate. The expenditure-switching effects of exchange rate will change exports and imports and eventually bring the current account to its optimal level.
Figure 1: Effects of import tariffs in the AA-DD model

Figure 2: Central Bank Balance Sheet

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>B: (US gov’t bonds)</td>
<td>Ms (Money Supply)</td>
</tr>
<tr>
<td>F (Foreign reserves)</td>
<td>ΔMs</td>
</tr>
<tr>
<td>ΔF</td>
<td>ΔMs</td>
</tr>
</tbody>
</table>
Figure 3: Gain and Loss from Joining a Currency Area

Monetary Efficiency Gain,
Economic Stability Loss

GG’
GG
LL
LL’

Θ3 Θ2 Θ1

Economic Integration