

Problem Sets 2

1. International Trade, Exchange Rate, and Balance of Payment

Two countries, US and CH, produce two goods, apples and bananas. In one hour, US can produce either 2 apples or 10 bananas; CH can produce either 5 apples and 2 bananas. After opening up to trade, US and CH specialize in producing the good in which they can follow their own comparative advantage (lower opportunity cost). In trade equilibrium, US and CH agree to trade 1 apple for 2 bananas and both countries' international trade is balanced. There is no factor and asset trade.

		US	CH
Productivity	Apple	2	5
	Banana	10	2
Specialization	Apple	0	5
	Banana	10	0
Trade Equilibrium	Apple	2.5	2.5
	Banana	5	5
Local Prices	Apple	\$ 5	¥ 2
	Banana	\$ 1	¥ 5

- 1) In trade equilibrium, what would be the imports and exports of goods for both countries, given the exchange rate of 1 apple for 2 bananas? Which country is running trade surplus or deficit?
- 2) In a monetary world, international trade and countries' balance of payments are facilitated by currencies instead of barter. Suppose the exchange rate between dollar and yuan is $\$1 = ¥1$ and local prices for the goods are shown in the table. In trade equilibrium, what would be the dollar value of imports and exports of the US? Is US running trade imbalance?
- 3) Suppose dollar appreciates: $\$1 = ¥2$ and both countries still trade 5 bananas for 2.5 apples. What would be the dollar value of imports and exports of the US? Is US running trade imbalance? How much foreign currency reserve can US earn via trade surplus?
- 4) Suppose dollar depreciates: $\$2 = ¥1$ and both countries still trade 5 bananas for 2.5 apples. What would be the dollar value of imports and exports of the US? Is US running trade imbalance? How much foreign currency reserve will US pay for trade deficit?
- 5) In a monetary world, what do you conclude about the role of exchange rate in affecting countries' balance of payments and foreign currency reserves?

2. Explain how each of the following transactions generates two entries—a credit and a debit—in the American balance of payments accounts, and describe how each entry would be classified:

- 1) An American buys a share of German stock by writing a check on an account with a Swiss bank.
- 2) An American buys a share of German stock, paying the seller with a check on an American bank.
- 3) The Korean government carries out an official foreign exchange intervention in which it uses dollars held in an American bank to buy Korean currency from its citizens.
- 4) A tourist from Detroit buys a meal at a restaurant in Lyons, France, paying with a traveler's check.
- 5) A California winemaker contributes a case of cabernet sauvignon for a London wine tasting.
- 6) A U.S.-owned factory in Britain uses local earnings to buy additional machinery.
- 7) A non-U.S. citizen works full time in the U.S. and invests his earnings in 401K.

3. Access the BEA's balance of payments data and obtain the U.S. balance of payments for 2019 in billions of dollars (See Appendix 1). Visit the BEA's net international investment position data page and obtain the U.S. net international investment position for 2018 to 2019 (Appendix 2). Employ the annual data from 2018Q3 to 2019Q3.

- 1) What was the U.S. current account for 2019? Deficit or surplus?
- 2) What was the U.S. financial account for 2019? Deficit or surplus?
- 3) What was the U.S. change in external wealth for 2019?
- 4) What was the U.S. total valuation effect in 2019?
- 5) Does the answer to (4) equal the answer to (3) minus the answer to (2)? Why?
- 6) Do the BEA data indicate that the U.S. valuation effect was due to exchange rate changes for 2019?
- 7) What were the U.S. external liabilities as of 2018Q3? If 5% of these liabilities were held in foreign currency and were subject to a 10% exchange rate appreciation, what decrease in U.S. external wealth resulted?
- 8) What were the U.S. external assets as of 2018Q3? If 65% of these assets were subject to a 10% exchange rate appreciation (U.S. dollar depreciation), what increase in U.S. external wealth resulted?
- 9) Using the answers to parts (7) and (8), what was the 2019 U.S. valuation effect due to exchange rate changes according to your rough calculation? Is it close to the BEA figure in part (4)?

4. During the 1980s, the United States experienced “twin deficits” in the current account and government budget. Since 1998 the U.S. current account deficit has grown steadily along with rising government budget deficits. Do government budget deficits lead to current account deficits? Identify other possible sources of the current account deficits. Do current account deficits necessarily indicate problems in the economy?

5. The open-economy saving-investment-current identity $S=I+CA$ or $CA=S-I=(S_{\text{private}}+S_{\text{public}})-I=(S_{\text{private}}-I)+(T-G)$ implies that to reduce a current account deficit, a country must increase its private saving, reduce domestic investment, increase taxes, or cut its government budget deficit. Nowadays, some politicians recommend restrictions on imports from China (and other countries) to reduce the American current account deficit. How would higher U.S. barriers to imports affect its private saving, domestic investment, and government deficit? Do you agree that import restrictions would necessarily reduce a U.S. current account deficit? [0.5pts]

6. Suppose that the U.S. net foreign debt is 25 percent of U.S. GDP and that foreign assets and liabilities alike pay an interest rate of 5 percent per year. What would be the drain on U.S. GDP (as a percentage) from paying interest on the net foreign debt? Do you think this is a large number? What if the net foreign debt were 100 percent of GDP? At what point do you think a country's government should become worried about the size of its foreign debt? [0.5pt]

7. External wealth, trade balances, and capital valuation

- 1) Derive the future value of the external wealth at the end of period N as a function of the economy's trade balances TB from each period, the real interest rate is r , initial trade balance is TB_0 and initial wealth is W_0 .
- 2) Compute the present value of the external wealth W_N . Apply to the U.S. and analyze its debt sustainability.
- 3) In Finance, no Ponzi game condition (or end-of-world) implies that the present value of W_N shrinks to zero as N goes large or infinity. Explain why this implies that the economy's initial external wealth is equal to the present value of future trade deficits.
- 4) How would the expressions in (1) and (2) change if the economy had net labor income (positive or negative) to or from abroad or net unilateral transfers?