

Problem Set 1

Due in class on Thursday, February 9.

To be handed at the beginning of lecture.

Please write your name, GSI name and section time in your problem set.

Problem 1: National income accounts

Suppose an economy's national accounts are $GDP = 100$, $C = 70$, $I = 40$, $G = 20$, $NFP = 0$ and $EX = 20$ where GDP is gross domestic product, C is consumption, I is investment, G is government spending, NFP is net factor payments, and EX is exports. Recall $Y \equiv GNP = GDP + NFP$. Since $NFP = 0$, then $Y = GDP$. Using the national income identity find the value of imports (IM). What is the current account balance? What is the savings rate? What would the government, private, and total savings rate be if the government introduced taxes $T = 10$ while the other variables remain unchanged?

Problem 2: BoP transactions

Explain how, if at all, each of the following transactions generates two entries (a credit and a debit) in the U.S. balance of payments accounts and describe how each entry would be classified:

- (a) A U.S. resident buys shares of a Portuguese company paying via wire transfer from her Wells Fargo account to a Portuguese bank.
- (b) A U.S.-owned company in Britain uses local earnings to buy an additional machine.
- (c) An Australian tourist rents a car in the U.S. and pays with her credit card.

Problem 3: BoP identity

Is it possible for a country to have a current account surplus and balance of payments deficit at the same time? Explain your answer and provide a numerical example.

Problem 4: BoP accounts

As discussed in lecture, central bank reserve transactions enter into a country's balance of payments as part of the Financial Account (FA) under official reserve balance. This portion of the balance of payments is often closely watched by financial market participants as an indicator of government exchange rate policy and current account sustainability.

Suppose we consider a hypothetical country (called Kumar) that uses the dollar as its currency. (Several countries, such as Panama, use another country's currency rather than printing and managing their own.) Further, assume it has a current account (CA) deficit of \$500 billion and a private non-reserve financial account (NRFA) surplus of \$250 billion.

- (a) What is Kumar's official settlements balance (OSB)?
- (b) Is Kumar's net foreign asset position rising or falling?
- (c) Assume that foreign central banks are neither buying nor selling any claims they might hold on Kumar. What can we infer is happening to the Kumari central bank's foreign exchange reserves? That is, is Kumar buying or selling foreign exchange reserves and how much?
- (d) Now, suppose we learn that a foreign central bank (say the U.S. Fed) has purchased \$300 billion of Kumari assets over the past year. How does this change the answer we gave to part (c)? Can you summarize the balance of payments accounts in this scenario?

Problem 5: Exchange rates

- (a) Suppose you are producing bicycles in Poland and you sold on credit merchandise worth \$1 million to a German distributor. They are due to pay you in 3 months. Under what exchange rate expectations would it be to your advantage to delay this payment?
- (b) Suppose you are the CEO of BigMoney Inc. and you hope to acquire a Swedish company. So, you might need Swedish Kronor 3 months from now. What is the best way for you to hedge the exchange rate risk in this situation? Explain how your answer may vary with your expectations of future exchange rates. (Please note that you are not certain that the deal will go through.)
- (c) Suppose you are a producer of asphalt located in China. Petroleum is one of the major inputs for asphalt. Your company must import petroleum which is sold in a world market and priced in U.S. dollars. How are the profits of your company affected when the yuan appreciates against the dollar?
- (d) Multinational firms generally have production plants in a number of countries. This enables them to move production from expensive locations to cheaper ones in response to various economic developments—a phenomenon called outsourcing when a domestically-based firm moves part of its production abroad. If the dollar depreciates, what would you expect to happen to outsourcing by American companies? Explain.

Problem 6: Understanding exchange rate movements

- (a) Your uncle Bill is planning to move to Italy and needs to know about exchange rates. Since he knows you are taking Econ 182, he asks you to explain to him how

the exchange rate between \$ and € is determined. Answer your uncle's question by way of drawing a graph depicting equilibrium in the foreign exchange market and listing the various "exogenous" variables that affect equilibrium exchange rates.

- (b) Uncle Bill comes to you with a newspaper and tells you that the Euro area interest rate is likely to go up. He wants to know what is likely to happen to the USD/EUR exchange rate. Explain whether the USD/EUR exchange rate will appreciate or depreciate and why.
- (c) After hearing your explanation, your uncle asks "one thing I don't understand is that the dollar exchange rate with the euro has depreciated 12% in the last month, after a 15% appreciation the previous month. Surely your model cannot explain such large movements up and down. The market must be irrational." What is your response?

Problem 7: Interest parity transactions

- (a) Suppose you expect the Croatian currency, the Kuna, to appreciate 5% relative to the USD over the next 6 months. What additional information would you need in order to decide whether it is a good time to buy Kuna? Suppose you find out in the newspapers that the interest rate on Kuna deposits is 7%. What is the expected dollar return on Kuna deposits? What must the US interest rate be if the uncovered interest parity condition holds?
- (b) You are a foreign exchange trader specialized in the US dollar Swiss franc market (USD/CHF). One morning, you find the following two USD/CHF quotes: Quote A: 1.7750–1.7761; quote B: 1.7766–1.7777 (buy price-sell price).
 - (i) Can you make money from these quotes, how and why? What will happen if other forex traders decide to follow your strategy?
 - (ii) Another morning, you notice that the one-year dollar interest rate is 4%, while the one-year interest rate on Swiss francs is 2.7%. Today's USD/CHF rate is \$1.7. What spot rate do you expect for the USD/CHF in one year?
 - (iii) You log onto your electronic brokerage account and find that the current quote for the 360-day forward rate on USD/CHF is 1.79. Is there an arbitrage opportunity? If so, describe how you would take profit from it and how much you would get if you invested \$1. What do you anticipate if all of your fellow traders start doing the same?
- (c) You are considering a contract with a Korean distributor. Under this contract you receive 100 millions won in one year. Suppose the spot rate is 990 won/\$, the one-year forward rate on the won is 1010 won/\$, the US annual interest rate is 3.5% and the Korean annual interest rate is 4.5%. Further, suppose another potential Korean partner offers to pay you \$95,000 one year from now (note that this amount is payable in dollars rather than won). Which contract is more profitable for you? (Extra questions: Is the interest rate parity condition satisfied in this problem? How can you tell without calculating each respective return?)