Econ 872
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Answers to Homework #2

1. **Mississippi Mud Pies, Inc. needs to buy 1,000,000 Swiss francs (CHF) to pay its Swiss chocolate supplier. Its banker quotes bid–ask rates of CHF1.3990–1.4000/USD. What will be the dollar cost of the CHF1,000,000?**

   Answer: The bank's bid rate is CHF1.3990/$. That is the price at which the bank is willing to buy $1 in return for CHF1.3990. The bank sells dollars at its ask price CHF1.4000/$. Mississippi Mud Pies must sell dollars to the bank to buy CHF. Therefore, Mississippi Mud Pies will receive the bank's bid rate of CHF1.3990/$. The dollar cost of CHF1,000,000 is consequently

   $$\text{CHF } 1{,}000{,}000 / \text{CHF}1.399/\$ = \$714{,}796$$

2. **If the Japanese yen–U.S. dollar exchange rate is ¥104.30/$, and it takes 25.15 Thai bahts to purchase 1 dollar, what is the yen price of the baht?**

   Answer: To prevent triangular arbitrage, the direct quote of the yen price of the baht (¥/THB) must equal the yen price of the dollar times the dollar price of the baht (which is the reciprocal of the baht price of the dollar):

   $$¥104.30/\$ \times 1/(\text{THB}25.15/\$) = ¥104.30/\$ \times \$0.03976/\text{THB} = ¥\ 4.1471/\text{THB}$$

3. **As a foreign exchange trader, you see the following quotes for Canadian dollars (CAD), U.S. dollars (USD), and Mexican pesos (MXN):**

   USD0.7047/CAD MXN6.4390/CAD MXN8.7535/USD

   Is there an arbitrage opportunity, and if so, how would you exploit it?

   Answer: The direct quote for the cross-rate of MXN6.4390/CAD should equal the implied cross-rate using the dollar as an intermediary currency; otherwise there exists a triangular arbitrage opportunity. The indirect cross rate is

   $$\text{MXN}8.7535/\text{USD} \times \text{USD}0.7047/\text{CAD} = \text{MXN}6.1686/\text{CAD}$$

   This indirect cross rate is less than the direct quote so there is an arbitrage opportunity to exploit between the three currencies. In this situation, buying the CAD with MXN by first buying USD with MXN and then buying the CAD with the USD and finally selling that amount of CAD directly for MXN would make a profit because we would be buying the CAD at a low MXN price and selling the CAD at a high MXN price.

4. **The Mexican peso has weakened considerably relative to the dollar, and you are trying to decide whether this is a good time to invest in Mexico. Suppose the current exchange rate of the Mexican peso relative to the U.S. dollar is MXN9.5/USD. Your investment advisor at Goldman Sachs argues that the peso will lose 15% of its value relative to the dollar over the next year. What is Goldman Sachs's forecast of the exchange rate in 1 year?**

   Answer: One way to think of this is to say that the investment advisor is referring to the fact that the Mexican peso price of the dollar will be 15% higher next year. In this case, the forecast of the MXN/USD exchange rate in year 1

   $$\text{MXN9.5/USD} \times 1.15 = \text{MXN } 10.925\text{/USD}$$

   A 15% loss of value of the Mexican peso versus the U.S. dollar technically means that dollar price of the peso is 15% lower. We know that the current USD price of the peso is

   $$1 / (\text{MXN9.5/USD}) = \text{USD0.105263/MXN}$$

   If this exchange rate falls by 15%, the new exchange rate will be

   $$0.85 \times \text{USD0.105263/MXN} = \text{USD0.089474/MNX}$$

   In this case the forecast for the future exchange rate measured in pesos per dollar is

   $$1 / (\text{USD0.089474/MXN}) = \text{MXN11.1765/USD}$$

   The difference arises because the simple percentage change in the exchange rate depends on how the exchange rate is quoted.

5. **Deutsche Bank quotes bid–ask rates of $1.3005/€ - $1.3007/€ and ¥104.30 - 104.40/$. What would be Deutsche Bank's direct asking price of yen per euro?**

   Answer: The direct asking price of yen per euro (¥/€) is the amount of yen that the bank charges someone who is buying euros with yen. The bank would want this to be the same as the price at which it sells dollars for yen (the bank's ask price) times the price at which it sells euros for dollars (also the bank's ask price). Thus, the asking price of yen per euro should be

   $$(¥104.40/\$) \times (\$1.3007/€) = ¥135.79/€$$

6. **Alumina Limited of Australia has called Mitsubishi UFJ Financial Group to get its opinion about the Japanese yen–Australian dollar exchange rate. The current rate is ¥67.72/A$, and Mitsubishi thinks the Australian dollar will weaken by 5% over the next year. What is Mitsubishi UFJ's forecast of the future exchange rate?**

   Answer: If the Australian dollar weakens by 5% over the next year, it will take 5% fewer Japanese yen to purchase the Australian dollar. Thus, the forecast is

   $$¥67.72/A\$ \times (1 - 0.05) = ¥64.334/A\$$$