

ECON 202  
INTERMEDIATE MACROECONOMICS  
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**Summer School**  
**Key to Exercise 4**  
**Open Macroeconomics**

1. Suppose that you are given the following table. Could you find out the real exchange rate (RER) for years 1990, 1995, and 2000 and interpret your results?

	1990	1995	2000
X-R	\$2/YTL	\$2.5/YTL	\$2/YTL
P <sub>US</sub> index	100	110	130
P <sub>YTL</sub> index	100	120	108
RER	2 (\$2/YTL)(100/100)	2.72 (\$2.5/YTL)(120/110)	1.66 (\$2/YTL)(108/130)

2. Suppose that a Turkish importer contracts to purchase 1000 Apple computers at a cost of €500 per computer or \$650 per computer. The current exchange rates are YTL1.5/€ and YTL1.25/\$. Which currency should the importer prefer for payment?

The answer is obvious: €500/computer \* YTL1.5/€ → YTL750/computer

The answer is obvious: \$650/computer \* YTL1.25/\$ → YTL812.5/computer

It is cheaper to buy in Euros.

3. Suppose that a Turkish importer contracts to purchase 1000 Apple computers at a cost of €500 per computer or \$650 per computer. The payment is one-year later and expected exchange rates are YTL1.6/€ or YTL1.2/\$. Which currency should the importer prefer for payment?

The answer is obvious: €500/computer \* YTL1.6/€ → YTL800/computer

The answer is obvious: \$650/computer \* YTL1.2/\$ → YTL780/computer

It is cheaper to buy in Dollars.

4. Suppose that the annual interest rate in Turkey is 12%. Suppose that the current spot rate is YTL1.3/\$ and that the annual interest rate in the U.S. is 2%. What should be the expected exchange rate in a year ahead in order to assure equivalent returns in the two markets?

$(1 + 0.12) = (1/1.3)(1 + 0.02) E(e) \rightarrow E(e) = 1.427$

If  $E(e) > 1.427 \rightarrow$  invest in US and if  $E(e) < 1.427 \rightarrow$  invest in Turkey

5. Suppose that a Turkish investor likes taking risks. The annual interest rate in Turkey is 12% and the expected percentage depreciation of YTL against dollar is 10% in a year ahead. What should be the rate of interest in the States for making sure that both

markets yield the same return? (Answer this question by using the approximate UIP rule).

Using the approximate Uncovered Interest Parity rule, we find the rule as Invest in US is  $i_{US} > 2\%$

6. Suppose that expected percentage depreciation of Turkish YTL against U.S. \$ in a year is 20%. How many percentages should the rate of interest in Turkey must exceed that of U.S.?

20%

7. If the nominal exchange rate falls from 1 euro per dollar to 0.80 euros per dollar, holding the price level in the U.S. and Europe constant, what happens to the real exchange rate? What happens to U.S. imports and exports as a result?

Holding the prices of goods and services at their current levels in the U.S. and in Europe, a decrease in the nominal exchange rate also decreases the real exchange rate. A decline in the real exchange rate implies that U.S. goods are becoming less expensive relative to foreign goods, which tends to increase U.S. exports and reduce U.S. imports.

8. Suppose that the nominal exchange rate is 1 euro per dollar. What happens to the real exchange rate as the price of the good rises to \$130 in the U.S., holding the nominal exchange rate and the European price constant?

Holding the nominal exchange rate, as well as the prices of goods and services in Europe, at their current levels, an increase in the U.S. price level raises the real exchange rate, implying that U.S. goods are becoming more expensive, relative to foreign goods.

9. Suppose that the nominal exchange rate is 1 euro per dollar. What happens to the real exchange rate as the European price of the good rises to 120, holding the nominal exchange rate and the price level in the U.S. constant?

Holding the nominal exchange rate, as well as the U.S. price of the good, at their current levels, an increase in the price level in Europe reduces the real exchange rate, implying that U.S. goods are becoming less expensive, relative to foreign goods.

10. Suppose that the nominal exchange rate is 1 euro per dollar. What happens to the real exchange rate if the prices of U.S. goods and services rise by 10% (a 10% U.S. inflation rate), while the prices of European goods and services rise by only 5% (a 5% European inflation rate), holding the nominal exchange rate constant?

Holding the nominal exchange rate constant, higher inflation in the U.S. than in Europe will raise the real exchange rate, implying that U.S. goods are becoming more expensive, relative to foreign goods.

11. Given the following simple Keynesian model:

$$AE=C+I+G+X-M$$

$$C=50+(0.85)YD; \quad YD=Y-T; \quad T=(0.2)Y; \quad I=110$$

$$G=208; \quad X=82; \quad M=10+(0.08)Y$$

(a) Determine the equilibrium level of income.

At equilibrium,  $Y=AE \rightarrow Y=C+I+G+X-M \rightarrow$

$$Y=50 + (0.85)YD + 110 + 208 + 82 - 10 - (0.08)Y$$

$$Y=50 + (0.85)[Y-(0.02)Y] + 400 - 10 - (0.08)Y$$

$$Y=440 + (0.68)Y - (0.08)Y$$

$$Y=440 + (0.60)Y$$

$$Y - (0.60)Y = 440$$

$$(0.40)Y = 440 \rightarrow$$

$$Y = 1100$$

(b) When the equilibrium income level is attained, is there a surplus or deficit in the trade balance?

Trade balance is  $X-M = 82 - 10 - (0.08) Y \rightarrow$

$$X-M = 82 - 10 - (0.08) 1100 \rightarrow$$

$$X-M = 82 - 98 \rightarrow$$

$$X-M = - 16 \text{ (Deficit)}$$