**PROBLEM SET 6**
**14.02 Principles of Macroeconomics**
**April 20, 2005**
**Due April 27, 2005**

**I. Answer each as True, False, or Uncertain, providing some explanation for your choice.**

1. If consumers and investors are forward-looking, a one-time increase in the level of the nominal money stock only shifts the LM curve.

2. Increases in current and expected future *nominal* interest rates do not lead to an increase in financial wealth, if current and expected *real* interest rates are unchanged.

3. A country can have exports larger than its GDP.

4. If inflation in the U.S. is higher than that in Japan, the nominal exchange rate (measured as the price of dollars in terms of yens) decreases.

5. A country's GNP is equal to its GDP if its trade balance is 0.

6. In theory, a capital account deficit implies a current account deficit.

**II. The Budget Deficit in Denmark**
Consider the following statistics for Denmark in the 1980s. (Source: "Can Severe Fiscal Contractions Be Expansionary? Tales of Two Small European Countries," NBER Macroeconomics Annual, 1990, 75-110, by F. Giavazzi and M. Pagano.)

|  | 1979-1982 | 1983-1986 |
| --- | --- | --- |
| Average growth rate of government spending | 4.0% | 0.9% |
| Public debt as % of GDP | 10.2% | 0.0% |
| Average growth rate of disposable income | 2.6% | -0.3% |
| Average growth rate of private consumption | -0.8% | 3.7% |
| Average growth rate of business investment | -2.9% | 12.7% |

1. The Danish government made some fiscal policy changes at the end of 1982 and at the beginning of 1983. From the numbers above, what do you think they did?

2. If we employ the standard IS-LM model (without expectations), i.e. with $C = C(Y - T)$ and $I = I(Y, r)$, the impact of a decrease in government consumption on business investment is ambiguous. Explain.

3. Instead, we observe a drastic increase in business investment (its growth rate increased from -2.9% to 12.7%). How can an inclusion of expectations in the standard IS-LM model help in explaining such an increase in investment?

4. If we employ the standard IS-LM model (without expectations), ie. $C = c_0 + c_1(Y - T)$, a decrease (both growth rates and levels) in disposable income triggers a decrease in private consumption. How can an inclusion of expectations in the standard IS-LM model help in explaining the observed increase in private consumption growth (from -0.8% to 3.7%)?

Now you are told that the long-term real interest rates for that period are the following.

|  | 1979-1982 | 1983-1986 |
|---|---|---|
| Real interest rate | 6.7% | 3.3% |

5. What happened to the present value of an average consumer's financial wealth by 1986? Can this change in financial wealth help explain the increase in private consumption, even though the average growth rate of disposable income decreases? If so, why?

### III. The Yen and the Dollar

1. You will go to Japan tomorrow. Before departure, you go to the bank, cash out all your saving of $3000 and exchange that for ¥306,000. What is the nominal exchange rate $E$ (the price of dollars in terms of yens)?

2. Once you arrive at the airport in Tokyo, you realize you miss hamburgers already (and it is too early for sushi.) You go to your favorite fast-food chain and buy a hamburger. The hamburger costs ¥306. How much is it in dollars?

3. What is the real exchange rate $\epsilon$ (measured as the price of hamburgers in the United States in terms of hamburgers in Japan) if the price of a hamburger (exactly the same kind) in the U.S. is $2.

4. After the trip, you have ¥100,000 left, and the nominal exchange has decreased to 100. Did the dollar depreciate relative to the yen?

5. You are now considering whether you should invest the money left *either* in Japanese one-year bonds or U.S. one-year bonds. The U.S. one-year nominal interest rate is $i_t$, while that for Japan is $i_t^*$. Write down the condition so that you choose to buy U.S. bonds instead of Japanese bonds. Explain intuitively why you need this condition.

6. A minute before you make the decision, you hear from the news that the Japanese economy will do great this year and the yen will become "stronger." How does this affect your decision in (5)?

7. In theory, arbitrage requires that the condition you have in (5) holds as an equality. Give a reason why it may not hold as an equality in reality.