**NANYANG TECHNOLOGICAL UNIVERSITY**
**SCHOOL OF SOCIAL SCIENCES**
**SEMESTER 1 AY23-24**

**HE1002 MACROECONOMICS I**

**PROBLEM SET 5**

**Question 1**
Simon purchases a bond, newly issued by the Amalgamated Corporation, for $1,000. The bond pays $60 to its holder at the end of the first and second years and pays $1,060 upon its maturity at the end of the third year.

(a) What are the principal amount, the term, the coupon rate, and the coupon payment for Simon's bond?

(b) After receiving the second coupon payment (at the end of the second year), Simon decides to sell his bond in the bond market. What price can he expect for his bond if the one-year interest rate at that time is 3 percent? 8 percent? 10 percent?

(c) Can you think of a reason that the price of Simon's bond after two years might fall below $1,000, even though the market interest rate equals the coupon rate?

**Question 2**
Shares in Brothers Grimm Inc,. manufacturer of gingerbread houses, are expected to pay a dividend of $5.50 in one year and to sell for $99.00 per share at that time. How much should you be willing to pay today per share of Grimm:

(a) If the safe rate of interest is 5.1 percent and you believe that investing in Grimm carries no risk?

(b) If the safe rate of interest is 10.1 percent and you believe that investing in Grimm carries no risk?

(c) If the safe rate of interest is 5.1 percent but your risk premium is 2 percent?

(d) Repeat parts (a) – (c), assuming that Grimm is not expected to pay a dividend but the expected price is unchanged.

**Question 3**

Your financial investments consist of U.S. government bonds maturing in 10 years and shares in a start-up company doing research in pharmaceuticals. How would you expect each of the following news items to affect the value of your assets? Explain.

(a) Interest rates on newly issued government bonds rise.

(b) Inflation is forecasted to be much lower than previously expected. (*Hint*: Recall the Fisher effect from Chapter 6. Measuring the Price Level and Inflation.) Assume for simplicity that this information does not affect your forecast of the dollar value of the pharmaceutical company's future dividends and stock price.

(c) Large swings in the stock market increase financial investors' concerns about market risk. (Assume that interest rates on newly issued government bonds remain unchanged.)

**Question 4**

You have $1,000 to invest and are considering buying some combination of the shares of two companies. Donkeylnc and ElephantInc. Shares of DonkeyInc will pay a 10 percent return if the Democrats are elected, an event you believe to have a 40 percent probability; otherwise, the shares pay a zero return. Shares of ElephantInc will pay 8 percent if the Republicans are elected (a 60 percent probability), zero otherwise. Either the Democrats or the Republicans will be elected.

(a) If your only concern is maximizing your average expected return, with no regard for risk, how should you invest your $1,000?

(b) What is your expected return if you invest $500 in each stock? (*Hint*: Consider what your return will be if the Democrats win and if the Republicans win; then weight each outcome by the probability that event occurs.)

(c) The strategy of investing $500 in each stock does *not* give the highest possible average expected return. Why might you choose it anyway?

(d) Devise an investment strategy that guarantees at least a 4.4 percent return, no matter which party wins.

(e) Devise an investment strategy that is riskless – that is, one in which the return on your $1,000 does not depend at all on which party wins.

**Question 5**

How do each of the following transactions affect (1) the trade surplus or deficit and (2) capital inflows or outflows for the United States? Show that in each case, the identity that the trade balance plus net capital inflows equals zero applies.

(a) A U.S. exporter sells software to Israel. She uses the Israeli shekels received to buy stock in an Israeli company.

(b) A Mexican firm uses proceeds from its sale of oil to the United States to buy U.S. government debt.

(c) A Mexican firm uses proceeds from its sale of oil to the United States to buy oil drilling equipment from a U.S. firm.

**Question 6**

Use a diagram like Figure 11.4 (solid lines only) to show the effects of each of the following on the real interest rate and capital investment of a country that is a net borrower from abroad.

(a) Investment opportunities in the country improve owing to new technologies.

(b) The government budget deficit rises.

**Question 7**

Use a diagram like Figure 11.4 (solid lines only) to show the effects of each of the following on the real interest rate and capital investment of a country that is a net borrower from abroad.

(a) Domestic citizens decide to save more.

(b) Foreign investors believe that the riskiness of lending to the country has increase.

**Question 8**

A country's domestic supply of saving, domestic demand for saving for purposes of capital formation, and supply of net capital inflows are given by the following equations:

$$S = 1{,}800 + 2{,}000r$$
$$I = 2{,}000 - 4{,}000r$$
$$KI = -100 + 6{,}000r$$

(a) Assuming that the market for saving and investment is in equilibrium, find national saving, capital inflows, domestic investment, and the real interest rate.

(b) Repeat part (a), assuming that desired national saving declines by 120 at each value of the real interest rare. What effect does a reduction in domestic saving have on capital inflows?

(c) Concern about the economy's macroeconomic policies causes capital inflows to fall sharply so that now KI = -700 + 6,000r. Repeat part a. What does a reduction in capital inflows do to domestic investment and the real interest rate?