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

HE1002 MACROECONOMICS I

PROBLEM SET 4

Question 1

Corey has a mountain bike worth $300, credit card debt of $150, $200 in cash, a Sandy Koufax baseball card worth $400, $1,200 in a checking account, and an electric bill due for $250.

(a) Construct Corey's balance sheet and calculate his net worth.

For each remaining part, explain how the event affects Corey's assets, liabilities, and wealth. Which of the events, if any, correspond(s) to saving on Corey's part?

(b) Corey goes to a baseball card convention and finds out that his baseball card is a worthless forgery.

(c) Corey uses $150 from his paycheck to pay off his credit card balance. The remainder of his earnings is spent.

(d) Corey writes a $150 check on his checking account to pay off his credit card balance.

Question 2

State whether each of the following is a stock or a flow, and explain.

(a) The gross domestic product.

(b) The value of the U.S. housing stock on January 1, 2020.

(c) The amount of U.S. currency in circulation as of this morning.

(d) The government budget deficit.

(e) The quantity of outstanding government debt on January 1, 2020.

Question 3

Ellie and Vince are a married couple, both with college degrees and jobs. How would you expect each of the following events to affect the amount they save each month? Explain your answers in terms of the basic motivations for saving.

(a) Ellie learns she is pregnant.

(b) Vince reads in the paper about possible layoffs in his industry.

(c) Vince had hoped that his parents would lend financial assistance toward the couple's planned purchase of a house, but he learns that they can't afford it.

(d) A boom in the stock market greatly increases the value of the couple's retirement funds.

(e) Vince and Ellie agree that they would like to leave a substantial amount to local charities in their wills.

Question 4

Individual retirement account, or IRAs, were established by the U.S. government to encourage saving. An individual who deposits part of current earnings in an IRA does not have to pay income taxes on the earnings deposited, nor are any income taxes charged on the interest earned by the funds in the IRA. However, when the funds are withdrawn from the IRA, the full amount withdrawn is treated as income and is taxed at the individual's current income tax rate. In contrast, an individual depositing in a non-IRA account has to pay income taxes on the funds deposited and on interest earned in each year but does not have to pay taxes on withdrawals from the account. Another feature of IRAs that is different from a standard saving account is that funds deposited in an IRA cannot be withdrawn prior to retirement, except upon payment of a substantial penalty.

(a) Sarah, who is five years from retirement, receives a $10,000 bonus at work. She is trying to decide whether to save this extra income in an IRA account or in a regular savings account. Both accounts earn 5 percent nominal interest, and Sarah is in the 30 percent tax bracket in every year (including her retirement year). Compare the amounts that Sarah will have in five years under each of the two saving strategies, net of all taxes. Is the IRA a good deal for Sarah?

(b) Would you expect the availability of IRAs to increase the amount that households save? Discuss in light of (1) the response of saving to changes in the real interest rate and (2) psychological theories of saving.

Question 5

In each part that follows, use the economic data given io find national saving, private saving, public saving, and the national saving rate.

(a) Household saving = 200 Business saving = 400
Government purchases of goods and services = 260
Government transfers and interest payments = 135
Tax collections = 245 GDP = 3,000

(b) GDP = 6,400 Tax collections = 1,925
Government transfers and interest payments = 400
Consumption expenditures = 4,570
Government budget surplus = 100

(c) Consumption expenditures = 4,800
Investment = 1,000 Net exports = 16
Government purchases = 1,000
Tax collections = 1,700
Government transfers and interest payments = 500

Question 6

The builder of a new movie theater complex is trying to decide how many screens she wants. Below are her estimates of the number of patrons the complex will attract each year, depending on the number of screens available.

Number of screens	Total patrons
1	40,000
2	75,000
3	105,000
4	130,000
5	150,000

After paying the movie distributors and meeting all other noninterest expenses, the owner expects to net $2.00 per ticket sold. Construction costs are $1,000,000 per screen.

(a) Make a table showing the value of marginal product for each screen from the first through the fifth. What property is illustrated by the behavior of marginal products?

Assuming that the screens do not lose value over time (e.g. they can be resold at the construction costs), how many screens will be built if the real interest rate is:

(b) 5.5 percent?

(c) 7.5 percent?

(d) 10 percent?

(e) If the real interest rate is 5.5 percent, how far would construction costs have to fall before the builder would be willing to build a five-screen complex?

Question 7

For each of the following scenarios, use supply and demand analysis to predict the resulting changes in the real interest rate, national saving, and investment. Show all your diagrams.

(a) A reduction in military spending moves the government's budget from deficit into surplus.

(b) A new generation of computer-controlled machines becomes available. These machines produce manufactured goods much more quickly and with fewer defects.

(c) The government raises its tax on corporate profits. Other tax changes are also made, such that the government's deficit remains unchanged.

(d) Concerns about job security raise precautionary saving.

(e) New environmental regulations increase firms' costs of operating capital.