

1. (16 points) Suppose an economy has total labor available as 400 units. The economy produces goods 1 and 2 through the production functions for the two goods, $Y_1 = 0.5\sqrt{L_1}$, $Y_2 = \sqrt{L_2}$, respectively. Derive the mathematical expression of the production possibility frontier and its slope and shape (concave or convex), and then use the slope and shape of the production possibility frontier to illustrate the two general equilibrium insights.
2. (16 points) The price of paper used by C.K. Publishing increases. C.K. publishing responds to this price increase by changing its use of paper.
 - (1) Graphically demonstrate what happens to C.K. Publishing's use of paper when the company is minimizing cost. Explain. (6 points)
 - (2) Graphically demonstrate what happens to C.K. Publishing's use of paper when the company is maximizing profit. Explain. (10 points)
3. (18 points) Johnson works in Tainan with a fixed salary of m . Suppose his utility is determined by the amount of food (F) and spending on all other goods (AOG). Johnson's company is moving headquarter to Taipei where the price of food is supposed to be much higher.
 - (1) Graphically illustrate the salary compensation the company will offer to Johnson such that he's as well off as in Tainan. (6 points)
 - (2) Graphically illustrate the salary reduction Johnson will take if Johnson wants to stay in Tainan. (6 points)
 - (3) If Johnson's utility function is described by $U(F, AOG) = v(F) + AOG$, $v(0) = 0$, mathematically solve for the compensation defined in (1) and (2) to show that the two compensations will be equal in absolute value. (6 points)
4. (15 points) Define the following terms in either English or Chinese. Illustrate mathematical expression if it is in need.
 - (1) autonomous consumption
 - (2) Fisher effect
 - (3) Perfect capital mobility
 - (4) Phillips curve
 - (5) Human capital
5. (24 points) Use the IS-LM model to discuss both impacts of monetary and fiscal policies on output and interest rate in the following cases, respectively. You have to clearly define axis or curves, and to explain in words how curves move or shift.
 - (1) If investment does not dependent on the interest rate.
 - (2) If money demand does not depend on income.
 - (3) If money demand is extremely sensitive to the interest rate.
6. (11 points) The following questions are related to foreign exchange rate.
 - (1) Describe the relationship between a country's foreign exchange rate and its net exports. Explain why? (4 points)
 - (2) Give an example of an appreciation of a country's currency. Explain the procedure that a central bank intervenes in the foreign exchange market in order to prevent an appreciation of its currency. (7 points)