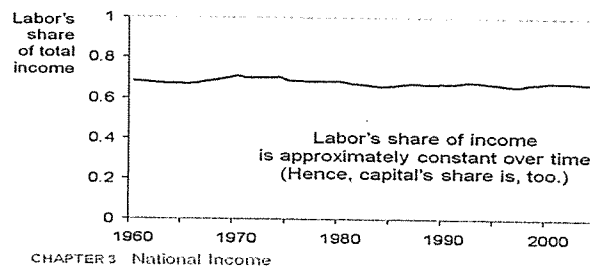


1. Cobb-Douglas Production function (15 points)

As shown in the below figure, the share of labor's income in total GDP in the U.S. is about $1-\alpha=0.67$ over time, we can then assume that $\alpha\cong 1/3$ to denote capital's share of total GDP. Please use the above information to derive the Cobb-Douglas Production function $Y=AK^\alpha L^{1-\alpha}$, where Y is GDP, A is a given technology, K is capital, L is labor. (Hint: that the marginal product of labor = real labor wage and marginal product of capital = real capital rent)



2. The Mundell-Fleming Model (15 points)

Japanese prime minister Shinzo Abe tries to revive the sluggish economy with "three arrows": a massive fiscal stimulus, more aggressive monetary easing from the Bank of Japan, and structural reforms to boost Japan's competitiveness. Assume Japan has a flexible exchange rate and perfect capital mobility (which is an accurate description). Please answer the following questions:

(a) What is the effect of the Abe's first arrow (i.e., increase money supply) in the Mundell-Fleming model with static expectations? What happens to output and the exchange rate? Draw a graph in (ϵ, Y) space to illustrate your answer.

(b) Use the Mundell-Fleming model with static expectations to analyze the effects of the Abe's second arrow (i.e., expanding government spending) in Japan on output, the interest rate and the exchange rate. Draw a diagram in (ϵ, Y) space to illustrate your answer.

(c) Now the U.S. is expected to withdraw her QE (Quantitative Easing) soon, which will give a rise to interest rate to the U.S. dollar. How does an increase in the U.S. interest rate i^* affect the Japanese IS curve? What are the effects of this change on output, the exchange rate, and the price level with imperfect capital mobility and rational expectations? Draw graphs in the (ϵ, Y) and (i, Y) spaces in your answer. (Hint: Use the balance of payments equation.)

3. Currency Crisis (10 points)

Mexico had incurred a peso crisis in 1994. The Eastern Asian crisis had occurred in 1997-98, which had become a serious turmoil to the exchange rate, stock

market, and economic growth rates in South Korea, Thailand, and Indonesia, etc.

- (a) Please briefly explain why the currency crisis would occur in these countries?
- (b) Please apply the IS-LM model to illustrate how these countries were forced to float their currencies?

4. Government Debt and Consumption (10 points)

The U.S. population is aging, such that health care is rising and social security payment is rising as well. In consequence, the U.S. deficit and debt are both rising correspondingly. In fact, the U.S. spending on health care and social security have increased from 4% GDP in 1975 to 8% GDP in 2013. As is well known, the Chinese RMB is going to competing the US dollar to become one of the world trade currency and foreign reserves. How these things might affect the U.S. military and economic power in the world?

5. (15 points) Given perfectly competitive input markets, a firm hires labor and capital in a general product market with perfectly competitive and monopoly as extreme cases.

- (a) Define TVP (total value product) and TFC (total factor cost) and explain how these two measures are different from total revenue and total cost. (4 points)
- (b) Define MVP (marginal value product) and illustrate mathematically why MVP is always less than or equal to VMP (value of marginal product). (4 points)
- (c) Derive the equilibrium conditions characterizing the firm's input hiring decisions and use these conditions to compare the input hiring decision of a monopolist and a competitive firm. (7 points)

6. (25 points) State with graphical illustrations whether the following statements are true, false, or uncertain. Be precise.

- (a) Shape of the production possibility frontier suggests "there is no free lunch."
- (b) Being an inferior good is a necessary condition for being a Giffen good.
- (c) Hicksian demand curve derived under the notion of EV (equivalent variation) always lies above that derived from CV (compensating variation).
- (d) Consider an industry that entry of new firms cause the average costs of all firms to increase. Firms (consumers) bear more (less) of the burden in the long run.
- (e) Monotonicity of preferences implies a convex indifference curve.

7. (10 points) An individual's current wealth is represented by W^* and $U(W)$ is a concave utility function that reflects how he or she feels about various levels of wealth. Now suppose this person is offered two fair gambles: a 50-50 chance of winning or losing $\$b$ or a 50-50 chance of winning or losing $\$2b$. Demonstrate that (a) this person will prefer his or her current wealth to that wealth combined with a fair gamble; and (b) this person will prefer a small gamble to a large one.

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