

• 請依序答題。選擇題僅寫出答案即可，但計算題須寫出計算過程，否則不計分。

1. (5分) Wine and Whisky are perfect substitutes for Ms. Sherry and the slope of her indifference curves is -1 . One day she bought two bottles of Whisky and 18 bottles of Wine. (The bottles of both drinks are the same size.)

- (a) Wine is less expensive than Whisky
- (b) Wine is more expensive than Whisky
- (c) Wine and Whisky cost the same
- (d) Ms. Sherry prefers Whisky to Wine
- (e) None of the above.

2. (5分) Consider the market demand and supply functions for Mosburger in a competitive market

$$Q^D = 26 - 2P, \quad Q^S = -9 + 3P.$$

A sales tax is imposed in the price received by firms at tax rate $t = 0.5$. Thus,

- (a) Consumer surplus is reduced by 18
 - (b) Producer surplus is reduced by 27
 - (c) The total amount of taxes collected is 30
 - (d) After taxation firms receive 10
 - (e) Deadweight loss associated with this sales tax is 15.
3. (5分) Consider FuxHonhai Co. facing the inverse market demand function

$$P = 10 - Q/2,$$

And operating two plants with output q_1 for plant 1 and q_2 for plant 2. Suppose marginal costs for the respective plants be

$$SMC_1 = 1 + 2q_1, \quad SMC_2 = 2 + q_1.$$

FuxHonhai Co. will maximize the profit. Therefore,

- (a) FuxHonhai Co. will produce $Q = 5$
 - (b) the optimal price for FuxHonhai Co. is $P = 7.0$
 - (c) the marginal revenue is 10
 - (d) the optimal output for plant 1 is 2
 - (e) the optimal output for plant 2 is 2.
4. (5分) Suppose the following market demand and short-run total cost STC functions for TaiDenn Co., a monopoly:

$$Q^D = 17 - \frac{P}{2}, \quad STC = Q^2 + 10Q + 50.$$

The monopoly will maximize the profit. Assume TaiDenn Co. employs price discrimination by offering a per-unit price discount for larger-volume purchases (nonlinear pricing). TaiDenn will set at marginal cost pricing for larger-volume purchases and a higher price will be set for low-volume purchases. Thus,

見背面

- (a) the profit-maximizing quantity for the smaller purchaser $Q_1 = 4$, the smaller purchaser unit price $P_1 = 28$
- (b) the profit-maximizing quantity for the larger purchaser $Q_2 = 3$, the larger purchaser unit price $P_2 = 22$
- (c) the profit without price discrimination for TaiDenn is 2
- (d) the profit with price discrimination for TaiDenn is 4
- (e) the optimal no-price-discrimination output for TaiDenn is 6.
5. (5分) The production function is $f(x_1, x_2) = x_1^{0.5}x_2^{0.5}$, if the price of factor 1 is \$20, price of factor 2 is \$15, in what proportions should the firm use factor 1 and factor 2, if it want to maximize profit?
- (a) $x_1 = 15x_2$
- (b) $x_1 = x_2$
- (c) $x_1 = 2x_2$
- (d) $x_1 = 0.67x_2$
- (e) None of the above.
6. (5分) Steven's utility function is $U(X, Y) = \min\{4X, 2X + Y\}$. The price of X is \$3 and the price of Y is \$1. Steven's income offer curve is:
- (a) a line parallel to the X axis
- (b) a ray from the origin with a slope of 2
- (c) a line parallel to the Y axis
- (d) the same as his Engel curve for X
- (e) None of the above.
7. (5分) Mary has the utility function $U(x_1, x_2) = \min\{2x_1 + x_2, x_1 + 2x_2\}$. She has \$40 to spend on both goods. If the prices of good 1 and good 2 are \$1 and \$4 respectively. Mary will
- (a) consume at least as many good 2 as good 1 but might consume both
- (b) definitely spend all of his income on good 1
- (c) consume at least as many good 1 as good 2 but might consume both
- (d) definitely spend all of his income on good 2
- (e) None of the above.
8. (5分) A monopsony's production function and a monopoly's marginal cost function SMC are

$$q = 60X - 0.5X^2 \text{ and } SMC_x = X,$$

where SMC corresponds to the monopsony's average input cost AIC, X is the output level of the monopoly. Both the monopoly and monopsony will maximize profits. Please select:

- (a) If the unit output price $P = 1$, then the purchased input $X_M = 20$
- (b) At $P = 1$, the equilibrium output for the monopoly is $X_U = 25$
- (c) If $P = 1$, the monopsony's AIC = 15
- (d) At $P = 1$, the monopsony's total input cost is 225
- (e) At $P = 1$, the monopsony's input price $V_M = 20$.

接次頁

9. (5分) Consider the inverse demand curve for a nonrival but exclusive commodity

$$P = 10 - Q/100,$$

With an associated marginal cost $MC = 4$. The firm will maximize the profit.

If the number of times the commodity is shared $\gamma = 100$, then the level of consumption is $Z = 100Q$. With a transaction cost of $C_t = 1$, the firm will maximize the profit for renting the commodity. Therefore,

- (a) the optimal level of consumption is $Z^* = 224$
 - (b) the producer surplus without renting this commodity is $PS = 450$
 - (c) the optimal unit price for renting the commodity is 5.52
 - (d) the producer surplus for renting the commodity is 2007.04
 - (e) the marginal cost of production associated with renting is more than the marginal cost of selling.
10. (5分) Consider Levi Petro Co., with the short-run total cost function

$$STC = -5Z + Z^2 - ZQ + Q^2 + 10,$$

facing a perfectly competitive per-unit price for Q of $P = 2$, and Z is emission level. Its marginal cost of the externality is $MBE = 5 - 2Z + Q$. In addition, assume the firm must pay a per-unit tax τ on emission level Z . Assume that $\tau = 3$ and the firm will maximize the profit. Thus,

- (a) the optimal output level without a per-unit tax on emission is 6
- (b) the optimal price without a per-unit tax on emission is 4
- (c) the optimal price with a per-unit tax on emission is 2
- (d) the optimal output level with a per-unit tax on emission is 2
- (e) the short-run marginal cost without a per-unit tax on emission is $SMC = -2 + 2Q$.

In 1965, gasoline sold for 30 cents. In 1965 dollars, today's price is 26 cents. So, yes, the current oil price depression is not ordinary.

Markets once assumed that instability, particularly in the Middle East, meant rising oil prices. Now instability means falling oil prices. Saudi Arabia, which peak oil theorists insisted was on the verge of exhausting its major fields, recently tweaked production to a record-beating 10.5 million barrels a day, low prices be damned. The motive: Riyadh's undeclared war against Iran and Iran's ally-of-the-moment, Russia.

Russia, whose energy development was expected to decline once sanctions cut it off from Western capital, surprised many by setting a post-Soviet record of 10.8 million barrels a day in December. Helping was the Kremlin's willingness to slash the exchange value of the ruble, cutting its oil companies' domestic costs even though it also hammered the standard of living of the average Russian (40% of whose food is imported). This Russian-Saudi game of chicken, occasioned by Mr. Putin's meddling in Syria, is now the key driver of a global oil glut. WSJ, 2016.1.2

11. (5分) 文章第一句話說明, 以1965年為基期, 2015年的汽油價格是0.26美元/加侖。假設1965-2015年期間, 美國平均名目利率是3.5%, 年物價膨脹率是2.0%, 實質利率是1.5%, 請推算2015年汽油的名目價格是多少元? (你的計算可能用到以上全部或部分數據; $1.035^{50} = 5.58$, $1.020^{50} = 2.69$, $1.015^{50} = 2.11$ 。)

見背面

12. (5分) 依文章所述, 以下關於油價變動之說法, 何者為真?

- (a) 由歷史經驗, 中東局勢不穩定時油價通常會下跌,
- (b) 由晚近的情況來看, 沙烏地阿拉伯希望藉由增產以提高油價,
- (c) 俄國政府讓盧布 (ruble) 貶值之後, 人民的生活費用也下降,
- (d) 盧布貶值的目的是要提高石油生產。

Between 1980 and 2014, according to an analysis of 60 economies by the IMF, a 10% depreciation relative to the currencies of trading partners boosted net exports by 1.5% of GDP over the long term, on average. Most of the improvement came within the first year.

But devaluations do not seem to have provided quite the same boost recently. Japan is the best example. The yen has been depreciating rapidly. Yet export volumes have barely budged. This is a surprise: the IMF calculates that Japanese exports are around 20% lower than it would have expected, given how the yen has weakened. Devaluations in other countries, including South Africa and Turkey, have also disappointed.

Both the IMF and the World Bank have highlighted a possible explanation for the weak performance of exports in countries with falling currencies: the prevalence of global supply chains. Globalisation has turned lots of countries into way-stations in the manufacture of individual products. Components are imported, augmented and re-exported. This means that much of what a country gains through a devaluation in terms of the competitiveness of its exports, it loses through pricier imports.

Economist, 2016.1.9

13. (5分) 依以上文章所述, 以下何者正確?

- (a) 依 IMF 之評估, 一國之貨幣若貶值 10%, 出口總值占 GDP 比率會上升 1.5%,
- (b) 近年來, 日圓貶值使得日本的出口大幅增加,
- (c) 貨幣貶值之效果主要是在長期之後才出現,
- (d) 以上皆非。

14. (5分) 經濟學家發現, 對某些國家而言貨幣貶值之效果並不大, 依據 IMF 與 World Bank 所提出的解釋, 原因是

- (a) 該國的出口品國外並無需求,
- (b) 因為供應鏈之影響, 該國的出口對象也因為貶值而需求減少,
- (c) 進出口占 GDP 比例愈高的國家, 貨幣貶值之效果愈小,
- (d) 全球化的趨勢會提高貶值之影響。

15. (5分) 2015 上半年, 世界各國關心美國聯邦準備銀行 (fed) 是否會升息。聯邦準備銀行宣布升息之後, 其可能影響為

- (a) 美國的貨幣供給成長率增加,

- (b) 美國家庭的消費支出會增加,
- (c) 台灣的資金可能外移,
- (d) 美元會貶值。

16. (5分) 由國民所得帳支出面計算, $Y = C + I + G + (X - M)$, 以下何者正確?

- (a) 若 Y 代表所得, 則國民儲蓄 $S = Y - C$,
- (b) 一國之儲蓄率上升時, 固定投資比率 I/Y 也會上升,
- (c) 全世界之總儲蓄一定會等於總投資,
- (d) 某國之 $X - M$ 若大於 0, 表示該國在國際借貸市場上是借入者。

17. (5分) 1955-2000年期間, 台灣人均 GDP 成長率約 6%, 全世界排名第一。假設台灣的總合生產函數為:

$$Y = AK^\beta L^{1-\beta}, \quad \beta = 0.4,$$

其中 Y 代表 GDP。假設人口年成長率為 2.0%, 勞動投入 (L) 年成長率為 3.5%, 固定資本 (K) 年成長率為 6.0%, 請計算技術水準 (A) 成長率等於多少?

When adjusted for living costs, output per person in the emerging world almost doubled between 2000 and 2009; the average annual rate of growth over that decade was 7.6%, 4.5 percentage points higher than the rate seen in rich countries. As a result of that difference the gap between the developed and developing worlds narrowed quickly.

Were the emerging world able to maintain a 4.5-percentage-point growth advantage over the rich world, then other things being equal its average income per person would converge with that in America in just over 30 years: scarcely a generation. Such a convergence would represent an historic change rivalled in its scope only by the extraordinary industrialisation that opened the global gaps between the rich and the rest in the first place, and completely unprecedented in its pace.

Alas, those hopes are now slipping away. An analysis of data on GDP per person suggests that convergence has slowed down a lot. Since 2008 growth rates across the emerging world have slipped back toward those in advanced economies. If China is included, emerging economies could expect to reach rich-world income levels, on average, in just over 50 years. If China is left out, catch-up takes 115 years.

In 1997, just before the great catch-up got into its swing, the World Bank's senior economist, Lant Pritchett, described a widening income gap between rich and poor countries as "the dominant feature of modern economic history". Its dominance was rendered particularly galling by the fact that orthodox economics struggled to explain it. Theories of economic growth like the one published by Nobel-winner Robert Solow in 1956 predicted that, over time, poor economies should catch up with rich ones.

In the Solow model economies were poor because their workers had access to less capital. This capital shortfall implied that the return on investment should be high, so capital should flow from rich countries to poor ones, leading the two worlds to converge on similar levels of productivity and income. The fact that the richer countries would themselves grow while this was going on complicated matters, but not

見背面

too terribly. Their long-run growth, Mr Solow reckoned, was driven by new technology which, once developed, could be adopted by poorer economies too. Indeed, the poor could potentially learn from the missteps made by the rich, and leapfrog directly to more productive ways of doing things.

The model seemed to apply well enough to the histories of then-rich countries. Thanks to its trailblazing industrial revolution, British GDP per person soared above that in other countries in the 19th century. By 1870 Britons were 30% more productive than Americans and 70% more productive than Germans. Yet this advantage disappeared as rivals improved upon Britain's successes. By the early 20th century America had already surpassed Britain; not long after the second world war most of western Europe had caught up.

But what was true for Europe and the colonies it had created in temperate climes did not apply elsewhere. Prior to the late 1990s poor countries growing faster than rich ones were rare, and doing it persistently was rarer still. From the mid-1940s to the mid-1990s less than a third of developing economies were growing faster than the rich world at any one time. In any given economy one decade's gains were often reversed in the next.

Some Asian economies proved to be exceptions. Japan, already industrialised in the first part of the 20th century, grew to be the world's second largest economy. South Korea, Taiwan and a smattering of city-states like Singapore and Hong Kong also got rich.

Adapted from *Economist*, 2014.9.13

閱讀以上文章，請回答第18-20題。

18. (5分) 依以上文章，以下何者正確？
- (a) 工業革命 (industrial revolution) 之後，工業國家之間出現所得趨近 (convergence) 現象，
 - (b) 工業革命之後到 20 世紀中葉，富國與窮國之所得差距擴大，
 - (c) 2000 至 2009 年期間，富國與窮國之所得差距縮小，
 - (d) 以上皆對。
19. (5分) 依據 Solow 成長模型
- (a) 窮國之所以窮，主要原因是技術水準低，
 - (b) 窮國之所得若向上趨近於富國，原因是其資本邊際產量較高，
 - (c) 富國之所以能繼續成長，原因是其固定資本持續累積，
 - (d) 富國的所得水準高，因此資本會從窮國流向富國。
20. (5分) 依以上文章，以下何者正確？
- (a) 1870 年美國的人均 GDP 已超過英國，
 - (b) 就低所得國家而言，20 世紀前半亞洲四小龍的高成長是例外，
 - (c) 依據經濟學者 Lant Pritchett 的說法，「現代經濟成長史」(modern economic history) 的主要特點是窮國的人均所得向上趨近於富國，
 - (d) Solow 模型可以解釋「現代經濟成長史」之現象。