

一、(18%) 選擇題 ※ 注意：請於試卷內之「選擇題作答區」依序作答。

[請根據下面的文章回答第 1. 及第 2. 題]

“Visitors to Japan are often surprised by how prosperous it seems. It doesn't look like a deeply depressed economy. Yet Japan is still caught in an economic trap. Persistent deflation has created a society in which people hoard cash, making it hard for policy to respond when bad things happen.

You might think that ending deflation is easy. Can't you just print money? But the question is what do you do with the newly printed money (or, more usually, the bank reserves you've just conjured into existence, but let's call that money-printing for convenience). And that's where respectability becomes such a problem.

America is recovering, but it has taken a long time to get there. Europe's monetary efforts have fallen well short of expectations. And so far the same is true of “Abenomics,” the bold — but not bold enough — effort to turn Japan around.

Printing money to pay for stuff sounds irresponsible, because in normal times it is. And no matter how many times some of us try to explain that these are not normal times, that in a depressed, deflationary economy conventional fiscal prudence is dangerous folly, very few policymakers are willing to stick their necks out and break with convention.

When central banks like the Federal Reserve or the Bank of Japan print money, they generally use it to buy government debt. In normal times this starts a chain reaction in the financial system: The sellers of that government debt don't want to sit on idle cash, so they lend it out, stimulating spending and boosting the real economy. And as the economy heats up, wages and prices should eventually start to rise, solving the problem of deflation.

These days, however, interest rates are very low in most major economies, reflecting the weakness of investment demand. What this means is that there's no real penalty for sitting on cash, and that's what people and institutions do. The Fed has bought more than US\$3 trillion in assets since 2008; most of the cash it has pumped out there has ended up just sitting in bank reserves.

Certain Japanese cabinet members favored lower corporate taxes, while others were wary of the potential political backlash for cutting taxes on large firms while raising taxes on consumers. Labor laws and rice production controls have also become contentious issues within Abe's government.”

1. According to the article, which of the following is true?

- (A) Visitors are likely to see beggars working on the street corners of affluent areas of Tokyo.
- (B) Central banks like the Federal Reserve or the Bank of Japan buy government debt to boost monetary demand.
- (C) There were sharp increases in the required reserve ratio in both USA and Japan.
- (D) There have been substantial disagreements among high-ranked Japanese government officials regarding the countercyclical fiscal policies.
- (E) All of the above.

2. A proper title for this article could be

- (A) The Beauty of Improving Social Welfare.
- (B) Emotions Build Social Order.
- (C) Expansionary Policy is Still Crippled by Caution.
- (D) Supply-side Economics.
- (E) Late Movers may Have Advantages in Times of Rapid Change.

6. Which of the following statements regarding the IS-LM Model is **false**?

- (A) An improvement of elderly welfare policies in Korea reduces the marginal propensity to save and thus implies a flat IS curve.
- (B) A reduction in government purchases of goods tends to raise equilibrium investment.
- (C) A reduction in government purchases of services tends to crowd out investment.
- (D) A reduction in government purchases of goods tends to reduce equilibrium output.
- (E) The LM curve is perfectly horizontal when there is a liquidity trap.

※ 注意：請於試卷內之「非選擇題作答區」依序作答，並應註明作答之大題及小題題號。

二、Houghland

The 2017 population of Houghland is estimated to be 200. All Houghland nationals are aged between 23 and 63. No newborns are expected in 2017. There are 100 Houghland nationals employed by state-owned enterprises (SOEs). The SOEs will neither recruit any new employees nor fire any existing employees in 2017. Moreover, none of the government employees are willing to switch jobs. Among the 100 Houghland nationals who are not employed by SOEs, 30 are competent in skilled labor jobs, which offer a regular wage rate of 1.5 Houghland Dollars. These people are either currently employed by Hope Inc., the only private sector business entity, or are actively looking for a job.

Approximately 50 Houghland nationals are not well educated but are either currently employed by Hope Inc. or are actively looking for a job. They are and will remain in the unskilled potential labor force. Unskilled labor jobs pay 1 Houghland Dollar per hour. Approximately 20 Houghland adults are able to but are not willing to work at all. No Houghland nationals or foreigners are likely to join or leave the labor force in the next five years. No one will immigrate in nor emigrate out of the country in the next five years.

Hope Inc. is a monopoly firm for its sole product, HOPENUT. At Hope Inc., an unskilled worker spends 500 hours to produce 1 unit of HOPENUT. In contrast, a skilled worker spends 200 hours to produce 1 unit of HOPENUT. The material cost for producing 1 unit of HOPENUT is 100 Houghland Dollars.

Hope Inc. will decide not to hire a worker if he/she cannot work for Hope Inc. 40 hours per week or if he/she cannot work for Hope Inc. 50 weeks per year. The Houghland law prohibits any worker to work for more than 48 hours per week or to work for more than 50 weeks per year. Overtime hours are to be calculated both on a daily and weekly basis.

If some skilled or unskilled worker works beyond the normal working time of 40 hours, with no exception, he/she will be paid one and half times (1.5x) the employee's regular wage rate. Total fixed cost at Hope Inc. is 2,400 Houghland Dollars. The demand curve function is $P = 840 - 0.5Q$

Required:

- (1) (5%) Estimate the market clearing unit price of HOPENUT in 2017.
- (2) (4%) Calculate the average cost for Hope Inc. to produce HOPENUT.
- (3) (4%) Estimate the unemployment rate for the whole country of Houghland in 2017.
- (4) (4%) Now assume that the Houghland passes a new law, to be enforced in 2017, setting the upper limit for the number of HOPENUT to be produced for the whole year to be 5,000 units. Draw the total cost curve for Hope Inc. (Make sure that (1) you specify the horizontal axis and (2) your vertical axis is the total cost.)

見背面

三、關於 DRAM (Competition in the DRAM (Dynamic Random Access Memory) Industry)

Read the following article and answer the questions.

DRAM (Dynamic Random Access Memory) has been used as the main form of memory in personal computers (PC). The purpose of main memory is to move data from mass storage areas (such as hard disk), to the CPU to accelerate computation. Traditionally, the larger the size of the main memory, the faster the PC. Therefore, it is critical to PC performance. As a result, the installed capacity of DRAM per PC has increased dramatically, averaging 42% annually from 1995-2015. Despite high demand growth, the supply of DRAM, however, has outstripped demand most years. As DRAM is a homogeneous product without differentiation, the competition has been on prices since the inception of DRAM by Intel.

The price of DRAM has fluctuated wildly over the last two decades, with the price increasing or decreasing as much as 50% a year. The determinants of DRAM prices are demand and supply. The demand of DRAM is price elastic. For example, in 2013, a fire in Hynix Suzhou(蘇州) DRAM factory reduced the worldwide supply by 5.3% and price increased by 30% three months later. But oversupply of the industry has depressed DRAM prices greatly. Also, as consumers care about the total price of a computer and pay less attention to installed capacity of main memory, the cost of DRAM has never exceeded 12% of the total cost of PCs. Therefore, when the price of TFT-LCD screens increases, computer companies tend to reduce DRAM content per notebook computer.

The supply of DRAM hinges on a number of factors. First, the technology producing DRAM is the key factor to supply. The "design rule", namely, the width of the line used to design the chip, such as 20 nanometers, determines the number of dies (cells) that can be produced in a wafer, which in turn, determines the cost of the DRAM. The smaller the design rule, the more dies that can be produced, and the lower the costs. Therefore, DRAM companies have striven to improve their production technologies, from 35 microns (one millionth of a meter) to 16 nanometers with substantial capital investment and R&D expenses. It is estimated that the capital expenditures of DRAM companies account for 30% of revenue and R&D expenses take up an additional 10% of revenue.

Price competition and continuous technological change force DRAM companies to face a prisoner's dilemma in regards to investing in next generation technology. Let's suppose that there are two companies, A and B. Both companies are considering whether to invest in next generation technology, which will result in a 50% increase of output. Let's assume that the current price is US\$1.10, the marginal cost is US\$1.00, and each company produces 100 units. If only A invests in new technology, the output will increase to 150 units and the price will drop to US\$0.80 while the cost will drop to US\$0.70. If BOTH A and B invest in the new technology, the total output will increase to 300 units and it will force the price to drop to US\$0.60. Consequently, the payoff matrix is the following:

The payoff matrix of investment in new technology

	B Investment	B NO investment
A Investment	-15, -15	15, -20
A No investment	-20, 15	10, 10

As a result, the outcome is overcapacity. The investment strategy explains why oversupply is the norm in the industry and DRAM firms have suffered losses most of the time, with the exception of Samsung. Samsung entered the DRAM industry in 1984 and became a technological leader in 1994 when they introduced 64MB DRAM six months ahead of competitors. Then, Samsung pursued the experience curve (the production cost is a declining

function of accumulated production volume) to lower the cost of DRAM ahead of competitors. When competitors came to market later, Samsung competed with them by offering the lowest cost of the industry. Oversupply plus a low cost dominant firm forced all other thirty or so DRAM producers in the US, Japan and Europe to go bankrupt or be sold, with the exception of Micron in the US. Now, as of 2015, the industry has only three participants: Samsung, Hynix (a Korean firm) and Micron (US) where Samsung accounts for 40% of the market.

From the SWOT (strengths, weaknesses, opportunities and threats) point of view, Taiwan should have entered the DRAM industry. First, Taiwan produced more than 60% of worldwide PCs, representing a great opportunity for DRAM consumption. Second, Taiwan had a strong semiconductor production complex built by TSMC (台積電) and UMC (聯電). Third, Taiwan had plenty of capital to be invested in high tech industries through a buoyant stock market. The only weakness was that Taiwan did not have the product technology. Taiwan entered the DRAM industry in 1995 by adopting a licensing model, producing DRAM based on a licensed technology. Unlike TSMC, which adopted a “foundry” mode to produce IC chips for IC design houses and then charges a fee, without taking on the risks of the IC chips they produce. Taiwanese DRAM producers pay technology licensors 10-20% of the output as a licensing fee but need to sell the rest of the output by themselves. As a result, Taiwan DRAM producers face enormous risks from wide price fluctuations in the DRAM industry. Without advanced technology, Taiwanese DRAM producers are always a technological follower. Over the last two decades, Taiwan DRAM producers lost about NT\$200 billion.

Please answer the following questions: 20% total

A. (16%) True and False questions: 2% each and 1% penalty for each wrong answer. Total score, after penalties, will not be negative.

1. The absolute value of DRAM price elasticity of demand is greater than 1.
2. The cross price elasticities of DRAM and TFT-LCD screen is negative.
3. DRAM is both a technology and capital intensive industry.
4. In 2015, the DRAM industry has become an oligopolistic market.
5. In the DRAM industry, technological leadership yields cost leadership.
6. Taiwan DRAM industry's competitive advantage is lower production cost.
7. Taiwan DRAM industry's failure can be attributed to the licensing mode of the technology.
8. According to the article, in the 1990s, due to a buoyant stock market, Taiwanese companies had a lower cost of capital and therefore, should have invested in capital intensive industries such as DRAM.

B. (4%) Using the numbers given in the article, please calculate and show the payoff matrix, and explain which outcome is the Nash equilibrium.

四、 Please read the following article and answer the questions: (10%)

Having begun to raise rates from near zero in December 2015, the US central bank was expected to stand pat in January 2016 while signaling more increases later on. The S&P 500 index is down 8.2% on the year at 1877.08.

How could a quarter-point rise in rates—the total the Fed has so far delivered—send markets into a tailspin? Most analysts blame anxiety about China, emerging markets and oil, none of which have any direct relationship with the Fed.

見背面

Those are indeed factors. However, the Fed's influence goes far beyond short-term interest rates. Instead, it is also felt through a constellation of financial conditions: stock prices, corporate bond yields, exchange rates and most critically, yet least quantifiable, the appetite for risk.

After the Fed cut short-term rates to near zero in 2008, it was forced to rely on other forms of stimulus: purchases of bonds and promises not to raise rates, which worked in great part by raising confidence and risk appetites throughout financial markets. But by relying so much on broader financial conditions to drive growth, the Fed has even less say in the outcome relative to prior cycles.

Yet when the "neutral" interest rate, which keeps the economy at full employment, is so low, the Fed's efforts to maintain growth can easily result in financial excess that can unravel at the first hint of tighter Fed policy. This leaves the Fed with little margin for error and few options to stanch any bleeding.

The oil and commodity selloff in 2015 was similarly rooted in real factors, notably Saudi Arabia's decision to stop defending the price of oil in 2014. But that has been amplified by the reversal of the flow of easy money, catalyzed by the Fed's determination, starting in early 2015, to move toward normalizing rates.

Since the end of 2014 the trade-weighted dollar has risen more than 20% and risk premiums, or yields on junk-rated bonds relative to those on safe Treasuries, have jumped by three percentage points.

While a quarter-point rise in interest rates shouldn't tip the U.S. into recession, an across-the-board tightening of financial conditions merits attention. J.P. MorganChase economist Jesse Edgerton reckons recent real economic indicators such as business sentiment and building permits imply a 21% probability of recession in the next 12 months, marginally above the 18% average of any given year. But financial indicators such as stocks and corporate bonds put the probability at between 30% and 40%.

Answer the following questions:

(10%) True and False questions : 2% each and 1% penalty for each wrong answer. Total score, after penalties, will not be negative.

1. According to the article, the Fed has fewer policy instruments to stimulate the economy when the interest rate is near zero.
2. Tighter Fed policy will easily result in financial excess.
3. Normalizing rates will increase the risk appetite of the market.
4. This article argues that it is not the quarter point rise of interest rate per se that has caused the big drop of the stock market this year.
5. This article suggests that the Fed should not raise rates this year.

五、在無線網路的年代許多可能性正在發生當中，特別是在決策相關資訊的傳輸傳達，在社群間做的即時廣宣與週知能力，以及無需太多額外的成本支出，就能讓一般人也享有的加值服務。然而，下表中關於 4G 電信服務的收費型態，卻顯示不同國家電信資費，竟有如此大的差異。請問：

A. (10%) 關於整體通訊架構的運作、網路的串流和可及服務的提供，供、需方的參與者有哪些？各自需支付的主要成本項目為何？資訊傳輸服務是否屬於「公共財」的性質呢？對一般使用者而言，可否推定為是零成本的服務呢？

B. (15%)由政府事前公開標售頻譜，再由民間做商用開發來進行成本的攤銷，對電信業者而言，是否存在回收其投資成本的可能？無線網路的產業型態可能是「完全競爭」的市場嗎？在寡占市場的競爭下，其「定價基準」為何？請詳加定義說明和討論你的答案。

C. (10%)關於 4G 服務的跨國資費差異，應考量的成因有哪些？請在下表中選出五個國家，做簡表說明其可比對性；請就您考量的面項和參考數據，在簡表中做出條列整理。該如何進一步做統計分析呢？請予以解釋和討論。

本題的資料表：主要國家的 4G 收費與其使用限制

	Country	Company	USD/monthly	Calls	SMS&MMS	4G data
1	France	Free	\$27.33	Unlimited	Unlimited	20 GB
2	Denmark	Bibob	\$39.80	Unlimited	Unlimited	10 GB
3	USA	MetroPCS	\$60.00	Unlimited	Unlimited	Unlimited
4	Thailand	DTAC	\$64.81	Unlimited	Unlimited	12 GB
5	Sweden	Comviq	\$65.52	Unlimited	Unlimited	13 GB
6	Spain	Vodafone	\$68.30	Unlimited	Unlimited	6 GB
7	U.K.	EE	\$70.30	Unlimited	Unlimited	6 GB
8	Russia	MTS	\$72.90	Unlimited	Unlimited	Unlimited
9	Australia	Vodafone	\$75.10	Unlimited	Unlimited	6 GB
10	Germany	O2	\$75.10	Unlimited	Unlimited	5 GB
11	Hong Kong	Tree	\$77.20	Unlimited	Unlimited	10 GB
12	Mexico	Iusacell	\$91.60	Unlimited	Unlimited	3 GB
13	United Arab Emirates	Etisalat	\$95.29	Unlimited	Unlimited	10 GB
14	Italia	Tim	\$107.50	Unlimited	Unlimited	9 GB
15	NZ	Vodafone	\$113.00	Unlimited	Unlimited	5 GB
16	Canada	Telus	\$117.00	Unlimited	Unlimited	10 GB

資料來源：<https://www.whistleout.com/CellPhones/Guides/How-much-does-a-phone-plan-cost-around-the-world>

試題隨卷繳回