

第一部分：單選題

說明：以下每題 3 分，共 30 分。每題請選出最正確的一個答案。請將答案畫於答案卡。請用 2B 鉛筆作答於答案卡，答錯不倒扣。

1. Suppose the Phillips curve is given by

$$u = u^* - \alpha(\pi - E\pi),$$

where $u^* = 5\%$, $\alpha = 0.5$, and expected inflation equals last period's inflation (u : unemployment rate, π : inflation). If actual inflation turns out to be 2 percentage points higher than expected inflation, what happens to unemployment?

- A. It increases by 1 percentage point.
 - B. It decreases by 1 percentage point.
 - C. It decreases by 2 percentage points.
 - D. It remains unchanged.
 - E. Cannot be determined.
2. Assume a central bank minimizes a loss function over inflation and unemployment. If inflation expectations are adaptive, which outcome is most likely after a surprise monetary expansion?
- A. Permanent reduction in unemployment
 - B. Permanent increase in inflation with no unemployment effect
 - C. No change in inflation or unemployment
 - D. Immediate return to natural unemployment
 - E. Temporary reduction in unemployment

3. Assume the following closed-economy IS-LM model

$$\begin{aligned} Y &= C + I + G \\ C &= 50 + 0.75(Y - T) \\ I &= 180 - 8r \\ \left(\frac{M}{P}\right)^d &= Y - 40r \end{aligned}$$

$$G = 250, T = 200, M = 4000, P = 4,$$

where Y denotes aggregate output (income), C denotes aggregate consumption, I denotes aggregate investment, G denotes government spending, T denotes lump-sum taxes, r denotes the real interest rate, M denotes the nominal money supply, and P denotes the price level. The term M/P represents the real money supply. An increase in government spending shifts:

- A. the IS curve to the right
 - B. the IS curve to the left
 - C. the LM curve to the right
 - D. the LM curve to the left
 - E. both the IS and LM curves
4. Two economies are identical except that Economy A has a higher marginal propensity to consume (MPC) than Economy B. Both experience the same monetary expansion. Compared to Economy A, Economy B will experience
- A. A larger increase in output
 - B. A smaller increase in output
 - C. A larger decrease in interest rates
 - D. No change in output
 - E. A higher inflation rate

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5. Which of the following changes would most likely reduce the natural rate of unemployment?
- Stronger employment protection laws
 - Higher unemployment benefits
 - Improved job-matching technology
 - An increase in minimum wages
 - A contractionary monetary policy
6. When a central bank conducts open market sales of government bonds, which outcome is most likely in the short run?
- Higher output and lower interest rates
 - Lower output and higher interest rates
 - Higher inflation and higher output
 - Lower inflation and higher output
 - No change in macroeconomic variables
7. If Taiwan imposes a quota on imports of Japanese cars due to claims of unfair trade practices, and Japanese demand for Taiwanese exports increases at the same time, then, in the long run _____, everything else held constant.:
- the Japanese yen will depreciate relative to the New Taiwan dollar
 - there will be no effect on the Japanese yen relative to the New Taiwan dollar
 - the Japanese yen will appreciate relative to the New Taiwan dollar
 - the Japanese yen will either appreciate, depreciate or remain constant against the New Taiwan dollar
 - None of the above
8. The Bruce the Bank Manager can reduce interest rate risk by _____ the duration of the bank's assets to increase their rate sensitivity or, alternatively, _____ the duration of the bank's liabilities.
- shortening; shortening
 - lengthening; lengthening
 - lengthening; shortening
 - shortening; lengthening
 - None of the above
9. For which of the following is the change in reserves necessarily different from the change in the monetary base?
- Open market purchases from an individual who cashes the cheque
 - Open market purchases from a bank
 - Open market purchases from an individual who deposits the cheque in a bank
 - Open market sale to a bank
 - None of the above.
10. According to the expectations theory of the term structure
- when the yield curve is downward sloping, short-term interest rates are expected to remain relatively stable in the future.
 - yield curves should be equally likely to slope downward as slope upward.
 - investors have strong preferences for short-term relative to long-term bonds, explaining why yield curves typically slope upward.
 - when the yield curve is steeply upward sloping, short-term interest rates are expected to remain relatively stable in the future.
 - None of the above.

第二部分：多選題

說明：以下每題 4 分，共 20 分。請用 2B 鉛筆作答於答案卡。答案可能不只一個選項，需要完全答對才給分。

請閱讀以下關於 2025 年 *The Economist* 文章¹後回答問題。

The hidden risks in Taiwan's boom -- A weak-currency policy is punishing consumers and storing up financial peril

Taiwan is envied for its exporting prowess: it is home to all of the world's cutting-edge chipmaking. Just as extraordinary, but much less appreciated, is its towering current-account surplus, the result not just of a trade boom but of a long-undervalued currency. This aided Taiwan's export-led rise, but it has long outlived its purpose. While manufacturers have been coddled, ordinary Taiwanese consumers have been deprived of the fruits of growth, and financial risks are building up. It is time for Taiwan to loosen its grip on its currency. Taiwan's vast surpluses have been years in the making. For decades its central bank, known as the CBC, has kept the currency undervalued, giving manufacturing exporters a competitive boost. According to the GDP-adjusted Big Mac index, our measure of how far exchange rates depart from their underlying values, the Taiwan dollar is 55% undervalued against the American dollar -- the most in the world.

As a consequence, in this century Taiwan has run the world's biggest current-account surplus as a share of output, once entrepôts and petrostates are excluded. And lately, thanks to the artificial-intelligence boom, Taiwan's imbalances have gone into overdrive. In October its goods-trade surplus hit a record high of 31% of GDP in annualised terms—a quadrupling since the pandemic. According to the latest data for this year, Taiwan's current-account surplus has reached 16% of GDP. By comparison, China, the archetypal surplus economy, is running a current-account surplus of just 3%.

The problem with all this is that the cheap currency has become a costly and dangerous anachronism. For a start, it no longer delivers the benefits it once did. Taiwan is no longer an industrialising economy; its annual GDP per person now exceeds that of Japan. Its stock of foreign reserves, at \$600bn, is large enough to cushion the impact of a Chinese blockade or a financial crisis. And the best of Taiwan's chip- and computer-makers, which are responsible for three-quarters of total exports and nearly half of nominal GDP, can shrug off a stronger currency. A 20% appreciation in the Taiwan dollar would knock perhaps eight percentage points off the operating margins of TSMC, the world's leading chipmaker—still leaving them plumper than Alphabet's or Apple's.

At the same time, the costs and distortions of having an undervalued currency are mounting. First, it is a tax on consumers. In an economy that depends on imports for food, fuel and goods, the cheap currency has shifted purchasing power from ordinary households to exporters. The result has been that even by export-economy standards, Taiwan saves too much and consumes too little. Since 1998 private consumption as a share of output has tumbled by 20 percentage points. A policy that was meant to help Taiwan get rich is now depriving ordinary Taiwanese.

Another distortion is that the cheap currency is inflating property prices. Printing currency to buy foreign exchange has flooded Taiwan's financial system with liquidity and pushed down interest rates. That combination lies behind a quadrupling of house prices since 1998. And the weak-currency policy has seeded risk deep in the heart of Taiwan's financial system—a third distortion. To recycle the proceeds of its surpluses Taiwan has leant on its life-insurance industry, which has poured nearly \$1trn of households' savings largely into American Treasuries. But that has created a giant currency mismatch, because Taiwan-dollar liabilities are being funded with American-dollar assets. An abrupt move in either currency could wipe out the insurers, threatening a financial crisis.

Why, then, has the policy persisted? One reason is the export lobby. Taiwan's chipmakers could withstand a stronger currency, but existing policy has propped up a cohort of manufacturers that subsist on thin margins and would be severely hurt by an appreciation. Such firms make up perhaps 70% of manufacturing employment. Another reason is the CBC's unusual power. Printing Taiwan dollars to hoover up foreign-currency assets has minted handsome profits, which are remitted to the government and have become a big source

¹ "The hidden risks in Taiwan's boom." *The Economist*, November 15th 2025.

of revenue. Central-bank transfers make up 6% of total government receipts, compared with a rich-world average of 0.4%.

The situation is becoming increasingly precarious. One risk is that further depreciation in the American dollar destabilises Taiwan's life insurers, which have become too big to fail. A second danger is that American trade-surplus hawks take flight again, using tariffs and their security leverage to force Taiwan to revalue. That could happen at any time.

That is why Taiwan must unpick its outdated economic model—and build a better one. The CBC should gradually loosen its grip on the currency. Inevitably, the transition will be fraught with political and financial risks. But these risks can be managed. The key is for the CBC to establish a long-term path for the currency. And in return, ordinary Taiwanese will at last be able to enjoy more of the fruits of their country's extraordinary export miracle.

11. According to the article, Taiwan's persistent current-account surplus is partly the result of a long-undervalued currency. Which of the following statements are the correct economic implications of this policy, as discussed in the article? (答案可能不只一項)
- A. It transfers purchasing power from domestic consumers to exporting firms.
 - B. It increases private consumption as a share of GDP.
 - C. It leads to excess national saving relative to domestic investment.
 - D. It permanently raises real GDP growth through export competitiveness.
 - E. It lowers real household consumption by raising the domestic price of imports.
12. The article argues that Taiwan's weak-currency policy has distorted its financial system. Which of the following mechanisms are identified as contributing to financial risk? (答案可能不只一項)
- A. Large-scale foreign-exchange intervention increases domestic liquidity and depresses interest rates.
 - B. Low interest rates reduce housing demand and stabilize property prices.
 - C. Life insurers accumulate foreign-currency assets while liabilities remain in domestic currency.
 - D. A sudden exchange-rate appreciation could generate balance-sheet losses for insurers.
 - E. Capital controls fully insulate Taiwan's financial system from exchange-rate shocks.
13. Despite rising economic risks, Taiwan's weak-currency policy has persisted for decades. Which of the following explanations are consistent with the article's analysis? (答案可能不只一項)
- A. Export-oriented manufacturers benefit disproportionately from an undervalued currency.
 - B. The central bank gains political influence through large profit transfers to the government.
 - C. Taiwan lacks sufficient foreign-exchange reserves to allow currency appreciation.
 - D. Employment concentration in low-margin manufacturing creates resistance to appreciation.
 - E. Consumers strongly support the weak-currency policy due to lower living costs.

To understand how a pension system is exposed to exchange-rate risk and how this exposure can potentially generate intergenerational inequality, consider the following overlapping-generations model. The economy consists of a two-period overlapping-generations (OLG) framework. Individuals work and save when young (period t) and retire and consume when old (period $t+1$). Pension benefits are denominated in New Taiwan Dollars (NTD), while pension contributions are invested in U.S. Treasury bonds denominated in U.S. dollars (USD). The nominal exchange rate (NTD per USD) is exogenously managed by the central bank. Preferences are standard and time-separable, and financial markets are otherwise frictionless. Answer the following questions.

14. Suppose the central bank unexpectedly allows a sharp appreciation of the NTD in period $t+1$. Which of the following statements are correct? (答案可能不只一項)
- A. The realized domestic-currency return on pension savings is lower than expected.
 - B. The marginal utility of consumption in old age increases relative to expectations.
 - C. The pension system is unaffected because U.S. Treasuries are risk-free.
 - D. The old-age budget constraint becomes tighter in NTD terms.
 - E. Retirees experience a positive wealth effect.

15. Suppose Taiwan delays exchange-rate adjustment for many years, allowing pension funds to accumulate large USD asset positions.

When appreciation finally occurs, which statements are correct? (答案可能不只一項)

- A. Retirees at the time of appreciation bear significant welfare losses.
- B. Young workers can fully offset losses through labor supply adjustment.
- C. Losses arise because realized returns differ from expected returns.
- D. Exporters are the primary losers in the OLG sense.
- E. The policy redistributes welfare across cohorts.

第三部分：填充題

說明：下列共有 10 格的填充題，每格 5 分。請在答案卷上作答。請依照以下格式寫出答案編號((1)至(10))及對應之答案。所有題目皆不需列出計算過程，也不需要說明原因。答錯不倒扣。

(非選擇題作答區)	
(1)	(1)之答案 (不需列出計算過程或說明原因)
(2)	(2)之答案 (不需列出計算過程或說明原因)
(3)	(3)之答案 (不需列出計算過程或說明原因)
...	...
(10)	(10)之答案 (不需列出計算過程或說明原因)

1. 請考慮一個沒有不確定性的兩期消費模型 ($t = 1, 2$)。各期消費分別為 $c_1, c_2 > 0$ 。A 的偏好可以用兩期加總效用代表：

$$U(c_1, c_2) = u(c_1) + \beta u(c_2), \quad 0 < \beta < 1.$$

其中單期效用函數為：

$$u(c) = (c^{\alpha-1})/\alpha, \quad c \text{ 為該期消費，參數 } \alpha \neq 0$$

A 在兩期的所得分別為 $y_1, y_2 > 0$ 。兩期間 A 可以固定利率 r 借貸，跨期預算限制為：

$$c_1 + c_2/(1+r) = y_1 + y_2/(1+r), \quad r > -1.$$

(a) 請推導 A 在選擇兩期消費以極大化效用之下的跨期替代彈性，其定義為：

$$\partial \ln(c_2^*/c_1^*)/\partial \ln(1+r)$$

其中 c_1^*, c_2^* 為讓兩期效用最大的消費組合。 (1) (提示：可從效用極大化問題的一階條件計算此彈性)

(b) 假設 $\alpha = -1, \beta = 5/22, r = 0.1, y_1 = 36, y_2 = 66$ 。請求解 (c_1^*, c_2^*) 。 (2)

填答範例：若解出 $c_1^* = 55, c_2^* = 65$ ，則填寫答案為(55, 65)。

2. 一位買方準備購買一間房屋。房屋的真實市場價值可能為 $\theta \in \{0, 1, 2\}$ ，分別代表低價、中價與高價房屋，且三種狀態發生機率皆為 $1/3$ 。買方無法直接觀察 θ 。買方期望效用函數為 $u(a, \theta) = -(a - \theta)^2$ ，其中 $a \in \{0, 1, 2\}$ ，代表買方的出價。此效用函數設定代表出價低於或高於真實市場價值都會帶來損失。例如出價過高容易成交但買貴了，出價過低可能無法成交而錯失機會。

(a) 假設買方選擇出價以極大化期望效用，請根據先驗機率(即三種狀態發生機率皆為 $1/3$)求解買方的最適出價。 (3)

(b) 假設房仲可觀察到 θ ，並給買方建議 $m \in \{L, H\}$ 。L 代表房屋真實價值偏低，H 代表真實價值偏高。假設房仲建議策略為： $\theta = 0$ 時給 L； $\theta = 1, 2$ 時給 H。另假設買方在不同的出價之下期望效用相同時，將選擇其中最高的出價。請求買方在得到

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建議為 L 與 H 之下的最適出價 (a^L, a^H) 為何? (4) 填答範例: 若解出 $a^L=1, a^H=2$, 則填寫答案為 $(1, 2)$ 。

(c) 假設房仲偏好買方的出價相較於真實價值略高一級, 反映其希望買方「較積極出價」以提高成交機率與佣金收入的想法。房仲期望效用函數為 $v(a, \theta) = -(a - (\theta + 1))^2$ 。假設買方依(b)小題所算出的最適策略行動。在給定房仲觀察到 $\theta=1$ 的狀況下, 請計算房仲依照(b)小題的設定給出 H 建議的期望效用 v^H , 以及背離(b)小題的設定給出 L 建議的期望效用 v^L 。

(5)

填答範例: 若解出 $v^H=0, v^L=-1$, 則填寫答案為 $(0, -1)$ 。

提示: 在本題設定下, 不論真實的 θ 值為何, 只要買方依照(b)小題答案的策略出價, 房仲都不會想要背離(b)小題題幹的策略。因此本小題答案中 v^L 將小於或等於 v^H , 代表房仲背離原先策略的效用不會比較高。

(d) 請計算有房仲時買方的預期效用較無房仲時增加或減少多少? (6)

填答範例: 若無房仲時買方效用期望值為 -2 , 有房仲時為 -1 , 代表有房仲時效用期望值增加 1 , 則填寫答案為 1 。若答案為負值則代表效用減少。

3. 假設一債券持有人的期望效用函數為 $u(x) = (x^{\alpha-1})/\alpha$, 其中 x 為一有違約風險的零息債券到期時支付的金額, 參數 $\alpha \neq 0$ 。

(a) 定義 Arrow-Pratt 相對風險趨避係數 $RRA = -xu''(x)/u'(x)$ 。請根據債券持有人的效用函數推導 RRA 。(7) (提示: 答案為 α 的函數)

(b) 定義確定等值(certainty equivalent, CE)須滿足下式:

$$u(CE) = E(u(x)),$$

請根據債券持有人的效用函數推導 CE , 並將 CE 寫為 $E(x)$ 與 RRA 的函數。(8)

(c) 假設該債券到期時若沒有違約(機率為 0.75)將支付債券持有人 100 元, 若違約(機率為 0.25)僅能支付 50 元。債券持有人考慮購買由銀行推出的信用違約交換 (credit default swap, 簡稱 CDS)。CDS 在債券違約狀態下將支付投資人 50 元, 在未違約狀態下支付 0 。另假設 $\alpha = -1$, 無風險利率為 0 。請計算債券持有人對於 CDS 的最高願付價格。(9)

(d) 承上題, 假設銀行為風險中立, CDS 市場為完全競爭。此外, 銀行經辦 CDS 業務時除了可能給付投資人的支出外, 每張合約尚有固定成本 5 元。請求出市場均衡時的 CDS 價格。(10)