

World Economics Cup Deep Comprehension (Sample Questions)



Instructions:

This is a sample for the Deep Comprehension module of the competitive events of the World Economics Cup.

The sample test consists of 4 sample reading materials and 50 single-choice questions, while the formal test will consist of 7 reading materials and 100 single-choice questions. A certain quantity of questions are given under the material as your reference for answering. You have **60 minutes** to finish the sample test (150 minutes for the formal test).

The test gives 2 points to each question. Please fill the separate answer sheet with your pencil/pen.

<u>ATTENTION</u>: NO paper or online reference materials are allowed during the test; NO discussions are allowed during the test; Calculators without networking function and blank scratch paper are allowed during the test; Mobile phones and electronic dictionaries are NOT allowed during the test.

Please report to your test center supervisors immediately if you have any questions regarding the test material, etc. However, academic questions about the test itself will not be answered.

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I. Currency Fluctuations: How They Affect the Economy

Currency fluctuations are a natural outcome of the floating exchange rate¹ system, which is the norm for most major economies. Numerous fundamental and technical factors influence the exchange rate of one currency compared to another. These include relative supply and demand of the two currencies, economic performance, an outlook for inflation, interest rate differentials, capital flows, technical support and resistance levels, and so on. As these factors are generally in a state of perpetual flux, currency values fluctuate from one moment to the next.

Although a currency's level should be determined by the underlying economy, the tables are often turned as huge movements in a currency can dictate the overall economy's fortunes—a currency tail wagging the economic dog.

While the impact of a currency's gyrations on an economy is far-reaching, most people do not pay close attention to exchange rates because most of their business is conducted in their domestic currency. For the typical consumer, exchange rates only come into focus for occasional activities or transactions, such as foreign travel, import payments, or overseas remittances².

A common false idea that most people hold is that a strong domestic currency is a good thing because it makes it cheaper to travel to Europe, for example, or to pay for an imported product. Realistically, an unduly strong currency can exert a significant drag on the underlying economy over the long term as entire industries are rendered noncompetitive and thousands of jobs are lost. While consumers may disdain a weaker domestic currency, a weak currency can result in more economic benefits.

The value of the domestic currency in the foreign exchange market is an important instrument in a central bank's toolkit, as well as a key consideration when it sets monetary policy. Directly or indirectly, currency levels affect a number of key economic variables. They may play a role in the interest rate you pay on your mortgage, the returns on your investment portfolio, the price of groceries in your local supermarket, and even your job prospects.

A currency's level has a direct impact on the following aspects of the economy:

(1) Merchandise Trade

This refers to a nation's international trade or its exports and imports. In general terms, a weaker currency will stimulate exports and make imports more expensive, thereby decreasing a nation's trade deficit³ (or increasing surplus) over time.

For example, assume you are a US exporter who sold a million widgets at \$10 each to a buyer in Europe two years ago when the exchange rate was $\notin 1=$ \$1.25. The cost to your European buyer was, therefore, $\notin 8$ per widget. Your buyer is now negotiating a better price for a large order, and because the dollar has declined to 1.35 per euro, you can

¹ Floating exchange rate: A regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies. This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

 ² Payment remittances: Money transfers made by people to another party. They can be made to satisfy an obligation such as a bill payment or an invoice when someone shops online.
 ³ Trade deficit: An economic measure of international trade in which a country's imports exceed its exports. It represents an outflow of

³ Trade deficit: An economic measure of international trade in which a country's imports exceed its exports. It represents an outflow of domestic currency to foreign markets. It is also referred to as a negative balance of trade.



afford to give the buyer a price break⁴ while still clearing at least \$10 per widget.

Even if your new price is \notin 7.50, which amounts to a 6.25% discount from the previous price, your price in dollars would be \$10.13 at the current exchange rate. The depreciation in your domestic currency is the primary reason why your export business has remained competitive in international markets.

Conversely, a significantly stronger currency can reduce export competitiveness and make imports cheaper, which can cause the trade deficit to widen further, eventually weakening the currency in a self-adjusting mechanism. But before this happens, industry sectors that are highly export-oriented can be decimated by an unduly strong currency.

(2) Economic Growth

The basic formula for an economy's GDP is:

$$GDP = Y = C + I + G + (X - M)$$

where:

C = Consumption or consumer spending, the biggest component of an economy
I = Capital investment by businesses and households
G = Government spending
(X-M) = Exports-Imports, or net exports (NX)

From this equation, it is clear that the higher the value of net exports, the higher a nation's GDP. As discussed earlier, net exports have an inverse correlation with the strength of the domestic currency.

(3) Inflation

A devalued currency can result in "imported" inflation for countries that are substantial importers. A sudden decline of 20% in the domestic currency may result in imported products costing 25% more since a 20% decline means a 25% increase to get back to the original price point.

(4) Interest Rates

As mentioned earlier, the exchange rate level is a key consideration for most central banks when setting monetary policy. For example, former Bank of Canada Governor Mark Carney said in a September 2012 speech that the bank takes the exchange rate of the Canadian dollar into account in setting monetary policy. Carney said that the persistent strength of the Canadian dollar was one of the reasons why his country's monetary policy had been "exceptionally accommodative" for so long.

A strong domestic currency exerts a drag on the economy, achieving the same end result as tighter monetary policy (i.e., higher interest rates). In addition, further tightening of monetary policy at a time when the domestic currency is already unduly strong may exacerbate the problem by attracting more hot money from foreign investors, who are seeking higher yielding investments (which would further push up the domestic currency).

⁴ Price break: A reduction in price, especially for bulk purchase - the purchase of much larger quantities than the usual



(Questions 1-10 are based on Material I)

- 1. When currencies fluctuate wildly, they can create economic uncertainty and instability, affecting capital flows and international trade.
- A. True.
- B. False.
- 2. A depreciating currency can result in inflation as the cost of importing goods increases.
- A. True.
- B. False.
- 3. What causes currency fluctuations?
- A. Supply and demand for currencies.
- B. Economic growth of countries.
- C. Capital flows.
- D. All of above
- 4. The identity that shows that GDP is both total income and total expenditure is represented by
- A. GDP = Y.
- B. Y = PI + DI + NX.
- $C. \quad Y = C + I + G + NX.$
- D. GDP = GNP NX.
- 5. If more Americans want to suddenly purchase goods in Mexico, what likely happens?
- A. Demand for pesos increases, dollar falls in value compared to peso
- B. Demand for dollars increases
- C. Demand for pesos decreases
- D. No change or effect on currencies
- 6. Although the U.S. dollar is a floating exchange rate, the Fed can intervene in the foreign exchange market to keep the exchange rate close to a target rate. If the demand for U.S. dollars increases, what would the Fed probably do to maintain U.S. dollar exchange rate close to the target rate?
- A. Selling U.S. dollars to decrease supply.
- B. Selling U.S dollars to increase supply.
- C. Buying U.S. dollars to increase supply.
- D. Buying U.S. dollars to decrease supply/
- During periods of exchange rate volatility, firms dealing in _____ products face more exchange rate risk that the firms selling _____ products.
- A. low demand, high demand
- B. low supply, high supply
- C. undifferentiated, differentiated
- D. differentiated, undifferentiated



- 8. Assume there is an increase in nation's imports. This will cause the nation's currency to _____ and its trade balance to move toward a _____
- A. appreciate; surplus
- B. depreciate; deficit
- C. appreciate; deficit
- D. depreciate; surplus
- 9. Under a system of freely floating exchange rates, if the United States decrease its importation of Chinese goods (and Chinese importation of goods from the United States was unchanged):
- A. The yuan price of dollars would increase
- B. The dollar price of yuan would increase
- C. Yuan would be rationed in the united states
- D. Nothing would happen to dollar price of yuan or to the yuan price of dollars
- 10. How can an importer deal with currency fluctuations properly?
- A. By transferring the risk to the supplier by asking them to quote in the desired currency.
- B. By purchasing forward cover to protect him from fluctuations.
- C. By adding an exchange rate risk to the margins and carry the risk himself.
- D. All of above.



II. Exchange Rate Risk: Economic Exposure

In the present era of increasing globalization and heightened currency volatility, changes in exchange rates have a substantial influence on companies' operations and profitability. Exchange rate volatility affects not just multinationals and large corporations, but it also affects small and medium-sized enterprises, including those who only operate in their home country. While understanding and managing exchange rate risk is a subject of obvious importance to business owners, investors should also be familiar with it because of the huge impact it can have on their holdings.

Companies are exposed to three types of risk caused by currency volatility:

- **Transaction exposure**. This arises from the effect that exchange rate fluctuations have on a company's obligations to make or receive payments denominated in foreign currency. This type of exposure is short-term to medium-term in nature.
- **Translation exposure**. This exposure arises from the effect of currency fluctuations on a company's consolidated financial statements, particularly when it has foreign subsidiaries. This type of exposure is medium-term to long-term.
- Economic (or operating) exposure. This is lesser-known than the previous two but is a significant risk nevertheless. It is caused by the effect of unexpected currency fluctuations on a company's future cash flows and market value and is long-term in nature. The impact can be substantial, as unanticipated exchange rate changes can greatly affect a company's competitive position, even if it does not operate or sell overseas. For example, a U.S. furniture manufacturer who only sells locally still has to contend with imports from Asia and Europe, which may get cheaper and thus more competitive if the dollar strengthens markedly.

The degree of economic exposure is directly proportional to currency volatility. Economic exposure increases as foreign exchange volatility increases and decreases as it falls. Economic exposure is obviously greater for multinational companies that have numerous subsidiaries overseas and a huge number of transactions involving foreign currencies. However, increasing globalization has made economic exposure a source of greater risk for all companies and consumers. Economic exposure can arise for any company regardless of its size and even if it only operates in domestic markets.

Unlike transaction exposure and translation exposure, economic exposure is difficult to measure precisely and hence challenging to hedge⁵. Economic exposure is also relatively difficult to hedge because it deals with unexpected changes in foreign exchange rates, unlike expected changes in currency rates, which form the basis for corporate budgetary forecasts.

For example, small European manufacturers that sell only in their local markets and do not export their products would be adversely affected by a stronger euro, since it would make imports from other jurisdictions such as Asia and North America cheaper and increase competition in European markets.

Economic exposure can be mitigated either through operational strategies or currency risk mitigation strategies.

⁵ Hedge: A hedge is an investment that protects your finances from a risky situation. Hedging is done to minimize or offset the chance that your assets will lose value. It also limits your loss to a known amount if the asset does lose value. It's similar to home insurance. You pay a fixed amount each month. If a fire wipes out all the value of your home, your loss is the only the known amount of the deductible.



Operational strategies involve diversification of production facilities, end-product markets, and financing sources, since currency effects may offset each other to some extent if a number of different currencies are involved. Currency risk-mitigation strategies involve matching currency flows, risk-sharing agreements, and currency swaps.

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Currency effects may offset each other to some extent if a number of different currencies are involved. Currency riskmitigation strategies involve matching currency flows, risk-sharing agreements, and currency swaps. Matching currency flow means matching cash outflows and inflows with the same currency, such as doing as much business as possible in one currency, including borrowings. Currency swaps allow two companies to effectively borrow each other's currencies for a period of time.

To better understand economic exposure, we take a look at the following example. Assume that a large U.S. company that gets about 50% of its revenue from overseas markets has factored in a gradual decline of the U.S. dollar against major global currencies—say 2% per annum—into its operating forecasts for the next few years. If the dollar appreciates instead of weakening gradually in the years ahead, this would represent economic exposure for the company. The dollar's strength means that the 50% of revenues and cash flows the company receives from overseas will be lower when converted back into dollars, which will have a negative effect on its profitability and valuation.



(Questions 11-20 are based on Material II)

- 11. Exposure increases as foreign exchange volatility increases and decreases as it falls.
- A. True.
- B. False.
- 12. _____ exposure deals with cash flows that result from existing contractual obligations.
- A. Operating
- B. Translation
- C. Transaction
- D. Economic
- 13. _____ exposure measures the change in the present value of the firm resulting from unexpected changes in exchange rates.
- A. Economic
- B. Transaction
- C. Translation
- D. Accounting
- 14. According to the definition of economic exposure, we can infer that each of the following can refer to economic exposure EXCEPT .
- A. operating exposure
- B. strategic exposure
- C. accounting exposure
- D. competitive exposure
- 15. Which of the following is not a form of exposure to exchange rate fluctuations?
- A. transaction exposure
- B. economic exposure
- C. translation exposure
- D. credit exposure
- 16. Economic exposure refers to _____
- A. the exposure of a firms international contractual transactions to exchange rate fluctuations
- B. the exposure of a firms local currency value to transactions between foreign exchange traders
- C. the exposure of a firms financial statements to exchange rate fluctuations
- D. the exposure of a firms cash flows to exchange rate fluctuations
- 17. Assuming no transaction costs (i.e., hedging is "free"), hedging currency exposures should ______ the variability of expected cash flows to a firm and at the same time, the expected value of the cash flows should
- A. increase; not change
- B. decrease; not change
- C. not change; increase



- D. not change; not change
- Vada, Inc. exports computers to Australia invoiced in U.S. dollars. Its main competitor is located in Japan. Vada is subject to ______.
- A. economic exposure
- B. transaction exposure
- C. translation exposure
- D. all of above

Based on the following situation, answer questions 22-23:

A U.S. firm sells merchandise today to a British company for $\pounds 150,000$. The current exchange rate is $\$1.55/\pounds$, the account is payable in three months, and the firm chooses to avoid any hedging techniques designed to reduce or eliminate the risk of changes in the exchange rate.

- 19. The U.S. firm is at risk today of a loss if
- A. the exchange rate changes to 1.52/£.
- B. the exchange rate changes to 1.58/£.
- C. the exchange rate doesn't change.
- D. all of the above

20. If the exchange rate changes to \$1.58/£ the U.S. firm will realize a _____ of _____.

- A. loss; \$4,500
- B. gain; \$4,500
- C. loss; £4,500
- D. gain; £4,500



III. Assets Market Bubbles

The flexibility demonstrated by News Corp stock prices in the previous passage is common in markets for other financial assets such as government bonds, currencies under floating exchange rates, commodities⁶ such as gold, crude oil and corn, and tangible assets such as houses and works of art.

But share prices are not only volatile hour-by-hour and day-by-day. They can also display large swings, often referred to as bubbles⁷. Figure 3.1 shows the value of the Nasdaq Composite Index between 1995 and 2004. This index is an average of prices for a set of stocks, with companies weighted in proportion to their market capitalization. The Nasdaq Composite Index at this time included many fast-growing and hard-to-value companies in technology sectors.



Figure 3.1 The tech bubble: Nasdaq Composite Index (1995-2004).

The index began the period at less than 750, and rose in five years to more than 5,000 with a remarkable annualized rate of return of around 45%. It then lost two-thirds of its value in less than a year, and eventually bottomed out at around 1,100, almost 80% below its peak. The episode has come to be called the **tech bubble**. The term **bubble** refers to a sustained and significant departure of the price of any asset (financial or otherwise) from its fundamental value.

Sometimes, new information about the fundamental value of an asset is quickly and reliably expressed in markets. Changes in beliefs about a firm's future earnings growth result in virtually instantaneous adjustments in its share price. Both good and bad news about patents or lawsuits, the illness or departure of important personnel, earnings surprises, or mergers and acquisitions can all result in active trading—and swift price movements.

Because stock price movements often reflect important information about the financial health of a firm, traders who lack this information can try to deduce it from price movements. Using Hayek⁸'s language, <u>changes in prices are</u>

⁶ Commodities: Physical goods traded in a manner similar to stocks. They include metals such as gold and silver, and agricultural products such as coffee and sugar, oil and gas. Sometimes more generally used to mean anything produced for sale.

⁷ Asset price bubble: Sustained and significant rise in the price of an asset fuelled by expectations of future price increases.

⁸ Hayek: Friedrich August von Hayek CH FBA, often referred to by his initials F. A. Hayek, was an Austrian-British economist and philosopher best known for his defence of classical liberalism.



<u>messages containing information</u>. If markets are to work well, traders must respond to these messages. But when they interpret a price increase as a sign of further price increases (momentum trading⁹ strategies), the result can be self-reinforcing cycles of price increases, resulting in asset price bubbles followed by sudden price declines, called crashes.

Three distinctive and related features of markets may give rise to bubbles:

- **Resale value**: The demand for the asset arises both from the benefit to its owner and because it offers the opportunity for <u>speculation</u> on a change in its price. Similarly, a landlord may buy a house both for the rental income and also to create a capital gain by holding the asset for a period of time and then selling it. People's beliefs about what will happen to asset prices differ, and change as they receive new information or believe others are responding to new information.
- **Ease of trading**: In financial markets, the ease of trading means that you can switch between being a buyer and being a seller if you change your mind about whether you think the price will rise or fall. Switching between buying and selling is not possible in markets for ordinary goods and services, where sellers are firms with specialized capital goods and skilled workers, and buyers are other types of firms, or households.
- Ease of borrowing to finance purchases: If market participants can borrow to increase their demand for an asset that they believe will increase in price, this allows an upward movement of prices to continue, creating the possibility of a bubble and subsequent crash.

Could we explain the price movements in Figure 3.1 in a more economics model?



Figure 3.2 The beginning of a bubble in FCC shares.

Figure 3.2 illustrates the supply and demand for shares in a (so far) hypothetical firm called the Flying Car Corporation (FCC). Initially the share price is \$50 on the lowest demand curve. When potential traders and investors

⁹ Momentum trading: Share trading strategy based on the idea that new information is not incorporated into prices instantly, so that prices exhibit positive correlation over short periods.



receive good news about expected future profitability, the demand curve shifts to the right, and the price increases to \$60 (for simplicity, we assume that the supply curve doesn't move).

Then, how do bubbles come to an end? A bubble bursts when some participants in the market perceive a danger that the price will fall. Then would-be buyers hold back, and those who hold the assets will try to get rid of them. The process in Figure 3.2 is reversed. Figure 3.3 uses the supply and demand model to illustrate what happens. At the top of the bubble the shares trade at \$80. Both the supply and demand curves shift when the bubble bursts, and the price collapses from \$80 to \$54—leaving those who owned shares when the price was \$80 with large losses.



Figure 3.3 The collapse of FCC's share price.

If the price of an asset has been driven up solely by beliefs about future price rises, there should be opportunities for those who are well informed about the value to profit from their superior information. So if the rise in the Nasdaq index in Figure 3.1 was indeed a bubble, why did those who identi-fied it as a bubble fail to profit by placing gigantic bets on a major price decline?

As it happens, many large investors did 'lean against the wind' by placing bets on the bubble bursting, including some well-known fund managers on Wall Street. They did so by selling short¹⁰ (shorting): borrowing shares at the current high price and immediately selling them, with the intention of buying them back cheaply (to return to the owner) after the price crashed. But this is an extremely risky strategy, since it requires accuracy in timing the crash— if prices continue to rise, the losses can become unsustainable. You may be right about the bubble but if you get the timing wrong, then when you are due to buy the shares and return them to the owner, the price is higher than it was when you sold them. You will make a loss and may not be able to repay your loan.

¹⁰ Short selling: The sale of an asset borrowed by the seller, with the intention of buying it back at a lower price. This strategy is adopted by investors expecting the value of an asset to decrease. Also known as: shorting.



(Questions 21-35 are based on Material III)

- 21. An economic bubble is a period of rapidly increasing values for assets that may outstrip their real value.
- A. True.
- B. False
- 22. A sharing belief about the prospect of a certain company may lead to a bubble in its share.
- A. True.
- B. False.
- 23. All the cases where the market capitalization of companies increases in a short time are bubbles.
- A. True.
- B. False.
- 24. Asset price bubbles occur when _____
- A. the fundamental value of an asset exceeds its price
- B. the price of an asset exceeds its book value
- C. the price of an asset exceeds its fundamental value
- D. the book value of an asset exceeds its price
- 25. A bubble in asset prices is usually followed by a _____
- A. Crash
- B. Revolution
- C. Depression
- D. Recession
- 26. The tech bubble happens in _____.
- A. 1998-1999
- B. 1999-2000
- C. 2000-2001
- D. 2001-2002
- 27. What are bubbles ultimately based on?
- A. The government's fiscal policies.
- B. The market participants' expectation.
- C. The companies' marketing campaigns.
- D. The speculators' intentional operations.
- 28. According to Hayek, changes in prices are messages containing information. What does "information" refer to in this case?
- A. The financial health of a firm
- B. The financial health of the nation
- C. The financial health of the market
- D. The financial health of investment portfolio



- 29. Which does underlined word "speculation" mean, inferred from the context in the first feature of market?
- A. Buy at a low price and sell at a high price.
- B. Store massive goods to intentionally increase its price.
- C. Spread rumors to operate the market trend.
- D. None of above.
- 30. Which of the following statements about bubbles is correct?
- A. A bubble occurs when the fundamental value of a share rises too quickly.
- B. A bubble is less likely to occur in a market where people can easily switch from buying to selling.
- C. Momentum trading strategies make bubbles more likely to occur.
- D. Bubbles can only occur in financial markets.
- 31. Which of the following statements about bubbles is correct?
- A. Asset bubbles exist when market prices in some sector trade far higher than fundamentals would suggest.
- B. Market psychology and emotions like greed and herding instincts are thought to provide fuel for bubbles.
- C. When bubbles eventually pop, they tend to leave economic pain in their wake including recession or even depression.
- D. All of above.
- 32. Economist Hyman P. Minsky, who was one of the first to explain the development of financial instability and the relationship it has with the economy, identified five stages in a typical credit cycle. What is the correct sequence of the following five stages?
 - ① **Profit taking**: Figuring out when the bubble will burst isn't easy; once a bubble has burst, it will not inflate again. But anyone who looks at the warning signs will make money by selling off positions.
 - 2 **Panic**: Asset prices change course and drop as quickly as they rose. Investors and others want to liquidate them at any price. Asset prices decline as supply outshines demand.
 - ③ Euphoria: When euphoria hits and asset prices skyrocket, caution is thrown out the window.
 - ④ **Displacement**: Investors start to notice a new paradigm, like a new product or technology, or historically low interest rates basically anything that gets their attention.
 - (5) Boom: Prices start to rise at first, then get momentum as more investors enter the market.
- A. 12345
- B. 41532
- C. 53142
- D. 45312



33. The following figure shows the major global asset bubbles over the last for decades. Which of the bubbles demonstrates the sharpest fluctuation?



- A. MSCI Asian shares bubble
- B. Tech bubble
- C. Gold bubble
- D. Bitcoin bubble
- 34. Which of the following statements about asset prices is correct?
- ① A bubble occurs when beliefs about future prices amplify a price rise.
- ② When beliefs restrain price rises, the market equilibrium is stable.
- A. Only 1.
- B. Only 2.
- C. Both (1) and (2).
- D. Neither 1) nor 2).
- 35. Which of the following statements about short selling (shorting) is correct?
- A. Shorting is used to benefit from a price fall.
- B. Shorting involves selling shares that you currently own.
- C. The maximum loss a trader can incur by shorting is the price he receives from the sale of the shares.
- D. Shorting is a sure way of profiting from a suspected bubble.



IV. The Labour Market Model: Wage-Setting Curve and Price-Setting Curve

We now build a model of the labour market that can help to explain differences in unemployment rates across countries, and changes over time within a country. There are two important components of the labour market model – the waging-setting curve and the price-setting curve.

(1) The Wage-Setting Curve

In Figure 4.1, the horizontal axis represents the proportion of the working-age population, and goes up to a value of 1. The vertical axis is the economy-wide wage.



Figure 4.1 The wage-setting curve: Labour discipline and unemployment in the economy as a whole.

The upward-sloping line is called the wage-setting curve.

- At 12% unemployment in the economy, the employee's reservation wage¹¹ is low and the worker will put in a high level of effort for a relatively low wage. The firm's profit-maximizing wage is therefore low.
- At 5% unemployment in the economy, the employee's reservation wage is high and they will not put in much effort unless the wage is high. The firm's profit-maximizing wage is therefore higher.

Like the best-effort response function of the employee on which it is based, the wage-setting curve is a mathematical version of an 'if-then' statement: if the employment rate is x, then the Nash equilibrium¹² wage will

¹¹ Reservation wage: What an employee would get in alternative employment, or from an unemployment benefit or other support, were he or she not employed in his or her current job.

¹² Nash equilibrium: A set of strategies, one for each player in the game, such that each player's strategy is a best response to the strategies chosen by everyone else.



be w. This means that at the employment rate x, the wage w is the result of both employers and employees doing the best they can in setting wages and responding to the wage with a given amount of effort, respectively. This statement is true because the wage-setting curve for the whole economy is based directly on the employer's wagesetting decision and the employee's effort decision in an economy that is composed of many firms.

(2) The Pricing-Setting Curve

To understand the second component of the labour market model, we need to look more carefully at the firm's decision about how many people to hire, and how this depends on the amount that it produces. The firm's decision comes from the interaction between the firm's three departments shown in Figure 3.2. Suppose this firm has only one input—labour—so the wage is the only cost. And to make things even simpler, we assume that one hour of labour produces one unit of output (average product of labour = $\lambda = 1$). So the wage the firm pays (*W*) is the cost of a unit of output (in the relevant currency unit). Note that *W* is the nominal wage¹³ and *w* is the real wage¹⁴.

Department	knows	and on this basis sets the firm's			
Human resources	Prices, wages and employment in other firms	Nominal wage, W			
Marketing	All of the above and firm's demand function	Price of output, p			
Production	All of the above, plus labour productivity	and Employment, n			
	amount the firm can sell				
Eisen 4.2 The three descents determine the firm's hising					

Figure 4.2 The three departments determine the firm's hiring.

To achieve the maximum profit, the marketing needs to determine the most profitable price-quantity combination. All feasible p-q combinations are shown by the demand curve shown in Figure 4.3. The maximum profits occur at point B where the firm's demand curve is tangent to an isoprofit curve - the collection of all combinations of price and quantity that will yield the firm the same level of profit, given the wage.



Units of output, q (and hours of labour, n)

Figure 4.3 The firm's profit-maximizing choice of price, quantity, and employment.

¹³ Nominal wage: The wage measured in money.

¹⁴ Real wage: The nominal wage in an economy adjusted for changes in purchasing power = nominal wage / general price level.



When the firm sells q^* goods at a price p^* , its total revenue is p^*q^* . Notice from the figure that once the firm has set a price, it has determined the division of the total revenue between profits and wages. This is based on the markup (p - W)/p (or 1 - (W/p)), which is greater when the demand curve is less elastic, indicating less intense competition.

While for the economy as a whole, when all firms set prices this way, output per worker (labour productivity, λ) is split into real profit per worker Π/P and the real wage W/P.

Figure 4.4 shows the outcome of the price-setting decisions of firms in the whole economy and we use P to represent the economy-wide price level. The top horizontal line shows firms' revenues per worker in real terms: the average product of labour. What we call the price-setting 'curve' is not really much of a curve: it is just a single number that gives the value of the real wage that is consistent with the markup over costs, when all firms set their price to maximize their profits. The value of the real wage consistent with the markup does not depend on the level of employment in the economy, so it is shown as in Figure 4.4 as a horizontal line at the height of w^{PS} .



Employment, N (whole economy)

Figure 4.4 The price-setting curve.



By superimposing the wage-setting curve on the price-setting curve in Figure 4.5, we have a picture of the two sides of the labour market.



Figure 4.5 The labour market model - equilibrium in the labour market.

The equilibrium of the labour market is where the wage- and price-setting curves intersect. This is a Nash equilibrium because all parties are doing the best they can, given what everyone else is doing. Each firm is setting the nominal wage where the isocost curve is tangent to the best response function, and is setting the profitmaximizing price. Taking the economy as a whole, at the intersection of the wage- and price-setting curves (point X):

- The firms are offering the wage that ensures effective work from employees at least cost (that is, on the wagesetting curve). HR cannot recommend an alternative policy that would deliver higher profits.
- Employment is the highest it can be (on the price-setting curve), given the wage offered. The marketing department cannot recommend a change in price or output.
- Those who have jobs cannot improve their situation by changing their behaviour. If they worked less on the job, they would run the risk of becoming one of the unemployed, and if they demanded more pay, their employer would refuse or hire someone else.
- Those who fail to get jobs would rather have a job, but there is no way they can get one—not even by offering to work at a lower wage than others.



(Questions 36-50 are based on Material IV)

- 36. Real wage decreases as unemployment increases because there are more labor supply.
- A. True.
- B. False.
- 37. Price set by firms mainly depends on the unemployment rate.
- A. True.
- B. False.
- 38. Unemployment can exist in Nash equilibrium in the labour market as all parties are doing the best they can, given what everyone else is doing.
- A. True.
- B. False.
- 39. Which of the following figures demonstrates the correct relation between **unemployment rate** and real wage?



- 40. Holding other factors constant, if food prices decline relative to the prices of other products, then the real wages of agricultural workers will ______ and employment of agricultural workers will ______.
- A. increase; increase
- B. increase; decrease
- C. decrease; not change
- D. decrease; decrease
- 41. An unexpected increase in the world price of oil would create a sectoral shift that would likely
- A. decrease unemployment, and the decrease would be greater in a country with unemployment insurance than in one without



- B. decrease unemployment, but the decrease would be smaller in a country with unemployment insurance than in one without
- C. increase unemployment, and the increase would be greater in a country with unemployment insurance than in one without
- D. increase unemployment, but the increase would be smaller in a country with unemployment insurance than in one without
- A. a slowdown in real wage growth; a decline in employment
- B. a slowdown in real wage growth; rapid employment growth
- C. a slowdown in real wage growth; increasing wage inequality
- D. accelerated real wage growth; a decline in employment
- 43. Initially, workers in the shoe industry and the computer industry earn the same wage. Reductions in trade barriers give domestic consumers access to cheaper shoes produced abroad, so domestic shoe prices fall. At the same time, foreign consumers purchase more computers, raising the relative price of computers. As a result of these changes, wages in the shoe industry _____ and wages in the computer industry _____.
- A. increase; increase
- B. increase; decrease
- C. decrease; increase
- D. decrease; decrease
- 44. According to the passage, which of the following statement is correct?
- A. To maximize profits, firms set the wage at the level where the workers are indifferent between working and not working.
- B. Firms aim to set as high a price as possible.
- C. In equilibrium, the wage clears the labour market, so there is no unemployment.
- D. If all firms set the same price and pay the same nominal wage, then the higher the real wage that they pay, the lower is their markup.
- 45. Based on Figure 4.1, which of the following statement is correct?
- A. In a country where the stigma attached to unemployment is high, the wage-setting curve would be lower.
- B. A cut in the unemployment benefit would shift the best response function to the left, and raise the wage-setting curve.
- C. If the expected period of unemployment increased, it would shift the best response function to the right, raising the wage-setting curve.
- D. A sudden drop in the working age population (due, for example, to the retirement of the baby-boomer generation) would shift the wage-setting curve lower.
- 46. Figure 4.3 depicts the market's demand curve and the firm's isoprofit curves. Based on this information, which of the following statements is correct?
- A. The slope of the demand curve is the firm's marginal rate of substitution.
- B. Between points A and C, the firm would prefer point A as the output is higher.



- C. Having chosen its profit-maximizing price p^* , the firm would then set its nominal wage level.
- D. If the firm finds itself producing at point C, it can increase its profit by selling more units at a lower price.
- 47. Based on the price-setting curve (Figure 4.4), which of the following statements is correct?
- A. At point A, the markup is too high, and therefore the firm will raise its price. This leads to lower demand for the good and hence lower employment towards B.
- B. At point C, the real wage is too low and the markup is too high. Therefore the firm is able to increase profit by lowering prices and hiring more workers.
- C. Higher competition implies a lower price-setting curve.
- D. For any given markup, higher labour productivity implies a lower price-setting curve, which means a lower real wage.
- 48. Figure 4.5 depicts the labour market model. Consider now a reduction in the degree of competition faced by the firms. Which of the following statements is correct regarding the effects of reduced competition?
- A. The price-setting curve shifts up.
- B. The wage-setting curve shifts down.
- C. The equilibrium real wage falls.
- D. The unemployment level falls.
- 49. Which of the following causes of unemployment is associated with a wage rate above the market equilibrium level?
- A. minimum wage laws
- B. unions
- C. efficiency wages
- D. All of the above.
- 50. A competitive firm sells its output for \$45 per unit. It employs 30 workers, and the marginal product of the 30th worker is 4 units of output per day. It pays its workers a wage of \$150 per day. Based on these information, which of the following statement is correct?
- A. The firm's profit would increase if it hired a 31st worker.
- B. For the 30th worker, the value of the marginal product of labour is \$600.
- C. For the 30th worker, the marginal revenue product is \$600.
- D. The firm should raise the daily wage it pays to attract more workers.



Answer Keys

1		А	43. C
2	2.	А	44. D
3	3.	D	45. A
4	ŀ.	С	46. D
5	5.	А	47. B
6	5.	В	48. C
7	<i>.</i>	С	49. D
8	8.	В	50. A
9).	А	
1	0.	D	
1	1.	А	
1	2.	С	
1	3.	А	
1	4.	С	
1	5.	D	
1	6.	D	
1	7.	В	
1	8.	А	
1	9.	D	
2	20.	В	
2	21.	А	
2	22.	А	
2	23.	В	
2	24.	С	
2	25.	А	
2	26.	В	
2	27.	В	
2	28.	А	
2	29.	А	
3	80.	С	
3	31.	D	
3	32.	D	
3	33.	D	
3	34.	С	
3	35.	А	
3	86.	А	
3	87.	В	
3	88.	Α	
3	<i>3</i> 9.	A	
4	0.	D	
4	1.	C	
4	2.	В	