WORLD
ECONOMICS
CUP

WORLD ECONOMICS CUP

SAMPLE QUESTIONS

For National / Regional Cups and Continental Qualifier

Instructions:

This is a sample question paper for the national/regional cups and continental qualifiers of the World Economics Cup. Keep this sample as a reference.

The sample question paper consists of **THREE** sections:

- **Fundamentals** - 50 single-choice questions of 1 mark each.
- **Deep Comprehension** - 3 reading materials and 20 single-choice questions of 1.5 marks each.
- **Thinking and Innovation** - 1 case material and 10 single-choice questions of 2 marks each.

You have **90 minutes** to finish this test. The maximum mark is 100 points. Please answer all of the questions.

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

Fundamentals

1. ____ examines how people use their scarce resources to satisfy their unlimited wants.
A) Economics
B) Budgeting
C) Research
D) Prioritizing

2. ____ measures the market value of all final goods and services produced in a country during a given period, usually a year.
A) Gross domestic product
B) Net production
C) Consumer price index
D) Productivity

3. A combination of high inflation and high unemployment is known as _____.
A) superficial inflation
B) superflation
C) natural rate of unemployment
D) stagflation

4. _____ is an important indicator about the relative scarcity of a product or service.
A) The "invisible hand"
B) Product popularity
C) Market price
D) Cost of production

5. An increase in the quantity and quality of capital per worker is called _____.
A) capital interest
B) capital growth
C) capital deepening
D) inflated capital

6. The law of _____ states that each additional increment of one good requires the economy to give up successively larger increments of the other good.
A) supply and demand
B) increasing opportunity cost
C) productivity
D) diminishing return

7. Politicians running for national office are concerned about current _____ conditions.
A) microeconomic
B) macroeconomic

C) consumer behavior
D) personal salary

8. An oligopoly is comprised of _____ firm(s).
A) one
B) many
C) a few
D) most

9. Taxpayers are coerced because they _____.
A) are forced to pay for programs they do not support
B) cannot change things by voting
C) exercise choice when funding programs
D) are forced to obey laws they do not support

10. _____ measures how much output is produced from given inputs.
A) Capital deepening
B) Productivity
C) Standard of living
D) Capital

11. The most important category of investment is new _____.
A) exports
B) physical capital
C) imports
D) stocks

12. As long as the demand curve slopes downward, a leftward shift of the supply curve _____.
A) increases price but reduces the quantity
B) increases price and increases the quantity
C) decreases demand
D) increases supply

13. Total income for an entire group of people is referred to as _____ income.
A) personal
B) aggregate
C) gross
D) net

14. The government finances goods (roads, schools, etc) and services (care of the elderly). Which statement represents this concept the best?
A) The government produces the services but not the goods.
B) Government workers perform all the needed tasks.
C) Private firms charge more than the government for the same good or service.

D) The government hires private firms to produce some goods and services.

15. When the marginal tax rate is high it _____.
A) reduces people's incentive to work
B) stimulates the stock market
C) raises the after-tax income
D) encourages people to work longer hours

16. Supply indicates how much of a good producers _____.
A) are willing and able to offer
B) have sold
C) have yet to sell
D) produce

17. Voters adopt a stance of rational ignorance when they _____.
A) vote the wrong way on an issue
B) vote strictly along party lines
C) do not educate themselves on public matters
D) exercise poor judgment

18. All of the following reduce demand except _____.
A) an increase in consumer income
B) a decrease in the price of a substitute
C) a decrease in consumer income
D) a decline in the number of consumers

19. The amount by which actual output in the short run exceeds the economy's potential is called _____.
A) a contract gap
B) potential output
C) an expansionary gap
D) aggregate supply

20. _____ means being able to do something using fewer resources than other producers require.
A) Specialization
B) Division of labor
C) Absolute advantage
D) Comparative advantage

21. _____ is an example of a progressive tax.
A) Sales tax
B) Income tax
C) Value added tax

D) Flat tax

22. Macroeconomics are affected positively by _____.
A) lack of consumer confidence
B) government deficit spending
C) increased demand for exports
D) high unemployment rates

23. The process of turning an invention into a marketable product is called _____.
A) intrapreneurship
B) innovation
C) entrepreneurship
D) speculation

24. Elasticity of supply indicates how _____.
A) responsive producers are to a change in price
B) much the product costs
C) many products are in stock
D) adaptable the supply is

25. _____ causes prices to move to reach equilibrium in competitive markets.
A) The government
B) The labor market
C) Individual buyers and sellers
D) The stock market

26. An economy's maximum sustained output in the long run is known as its _____.
A) resource quotient
B) maximum output
C) fiscal policy
D) potential output

27. Checking the want ads for a job instead of going door to door _____.
A) increases newspaper circulation
B) reduces your transaction costs
C) reduces the number of jobs available
D) increases job competition

28. Newspaper headlines read: Business Orders Down Nationwide/Workers Laid Off/Households Cutting Back on Spending. What conclusion could be drawn from the headlines?
A) a possible recession is near
B) interest rates are high
C) a depression is unavoidable
D) consumer confidence is high

29. An excise tax is levied on things like _____.
A) hamburgers
B) housing
C) clothing
D) cigarettes

30. Low demand for a product and high supply will tend to _____ the price.
A) not affect
B) double
C) lower
D) raise

31. Real income refers to _____.
A) your income minus taxes
B) your income minus taxes and benefits
C) how much money you actually earn
D) how many goods and services you can buy

32. The demand for a resource is tied to the _____.
A) value of the output produced by that resource
B) latest social trends
C) economic conditions
D) available supply

33. An example of a commodity would be _____.
A) an automobile
B) a bushel of wheat
C) a one-of-a-kind brand
D) a book that has a copyright

34. Natural monopolies such as electric transmission firms or gas delivery systems are regulated by government to protect _____ interests.
A) government
B) public
C) entrepreneurial
D) special

35. The _____ economy is an economic system in which all resources are government-owned, and production is coordinated by the central plans of government.
A) pure market
B) traditional
C) mixed
D) command

36. _____ sorts the production process into separate tasks to be carried out by separate workers.
A) Division of labor
B) Absolute advantage
C) Flattened organization
D) Comparative advantage

37. In an effort to maximize individual political support, politicians establish relationships with special interest groups. What expression best describes this relationship?
A) Know where your bread is buttered.
B) The squeaky wheel gets the grease.
C) People who live in glass houses should not throw stones.
D) A penny saved is a penny earned.

38. _____ includes the machines, buildings, roads, airports, communications networks, and other manufactured creations used to produce goods and services.
A) Physical capital
B) Productive assets
C) Labor productivity
D) Human capital

39. In long-run equilibrium, firms in monopolistic competition are said to operate _____.
A) with efficiency
B) with balanced capacity
C) with excess capacity
D) free of government interference

40. Which statement is the most accurate?
A) The elasticity of supply is typically greater with a greater quantity of products on hand.
B) The elasticity of supply typically is not affected by time at all.
C) The elasticity of supply is typically diminished the longer the period of adjustment.
D) The elasticity of supply is typically greater the longer the period of adjustment.

41. Gross domestic product does not include _____.
A) media advertising
B) domestic housework
C) assembly lines
D) raw materials

42. A public good _____.
A) must be approved by voters
B) is available everyone
C) can be purchased by the public
D) can only be enjoyed by taxpayers

43. During the contractionary phase of the business cycle, _____.
A) smaller companies expand into larger companies
B) unemployment generally rises
C) inflation typically increases
D) business profitability increases

44. One of the ways the government finances its debt is with the sale of _____.
A) stamps
B) stocks
C) real estate
D) bonds

45. An economic boom _____.
A) reduces the need for human capital
B) has no impact on the workforce
C) has a direct impact on the workforce
D) frequently occurs during recession

46. The market clearing price is also called the _____ price.
A) equilibrium
B) unit
C) fair market
D) sale

47. The _____ shows how much output a country's producers are willing and able to supply at each price level.
A) equilibrium market
B) aggregate supply curve
C) aggregate demand curve
D) GDP per capita

48. _____ tax is not an example of the ability-to-pay tax principle.
A) Income
B) Property
C) Sales
D) Luxury

49. A deficit _____.
A) indicates the government is owed money
B) is always followed by a balanced budget
C) is necessary for government to run effectively
D) is a way of billing future taxpayers for today's spending

50. The demand for roofers would _____ if the price of shingles dropped by 50 percent.

A) fluctuate downward

B) rise

C) not be affected

D) fall

Answer Keys:

1.	A	11.	B	21.	B	31.	D	41.	B
2.	A	12.	A	22.	C	32.	A	42.	B
3.	D	13.	B	23.	B	33.	B	43.	B
4.	C	14.	D	24.	A	34.	B	44.	D
5.	C	15.	A	25.	C	35.	D	45.	C
6.	B	16.	A	26.	D	36.	A	46.	A
7.	B	17.	C	27.	B	37.	B	47.	B
8.	C	18.	A	28.	A	38.	A	48.	C
9.	A	19.	C	29.	D	39.	C	49.	D
10.	B	20.	C	30.	C	40.	D	50.	B

Deep Comprehension

Material I

Currency Fluctuations: How They Affect the Economy

Currency fluctuations are a natural outcome of the floating exchange rate[1] 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.

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 deficit[2] (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 €1=$1.25. The cost to your European buyer was, therefore, €8 per widget. Your buyer is now negotiating a better price for a large order, and

[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] 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.

because the dollar has declined to 1.35 per euro, you can afford to give the buyer a price break[3] while still clearing at least $10 per widget.

Even if your new price is €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.

(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

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).

<u>Questions 51-56 are based on Material I.</u>

51. What causes currency fluctuations?
A) Supply and demand for currencies.
B) Economic growth of countries.
C) Capital flows.

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

D) All of the above.

52. 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) Y = C + I + G + NX.
D) GDP = GNP - NX.

53. 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

54. 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

55. 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

56. 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 the above.

Answer Keys:
51. D
52. C
53. A
54. B
55. A
56. D

Material 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.

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 hedge[4]. 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

[4] 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.

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. 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.

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 57-62 are based on Material II.

57. ______ exposure deals with cash flows that result from existing contractual obligations.
A) Operating
B) Translation
C) Transaction
D) Economic

58. ______ 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

59. 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

60. 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

61. 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

62. 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 the above

Answer Keys:
57. C
58. A
59. C
60. D
61. B
62. A

Material III

Assets Market Bubbles

Share prices are not only volatile hour-by-hour and day-by-day. They can also display large swings, often referred to as bubbles. **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.

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 Hayek's[5] language, changes in prices are messages containing information. 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 trading[6] 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:

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

[6] 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.

- **Resale value:** The demand for the asset arises both from the benefit to its owner and because it offers the opportunity for speculation 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.
- **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.
- **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 economic model?

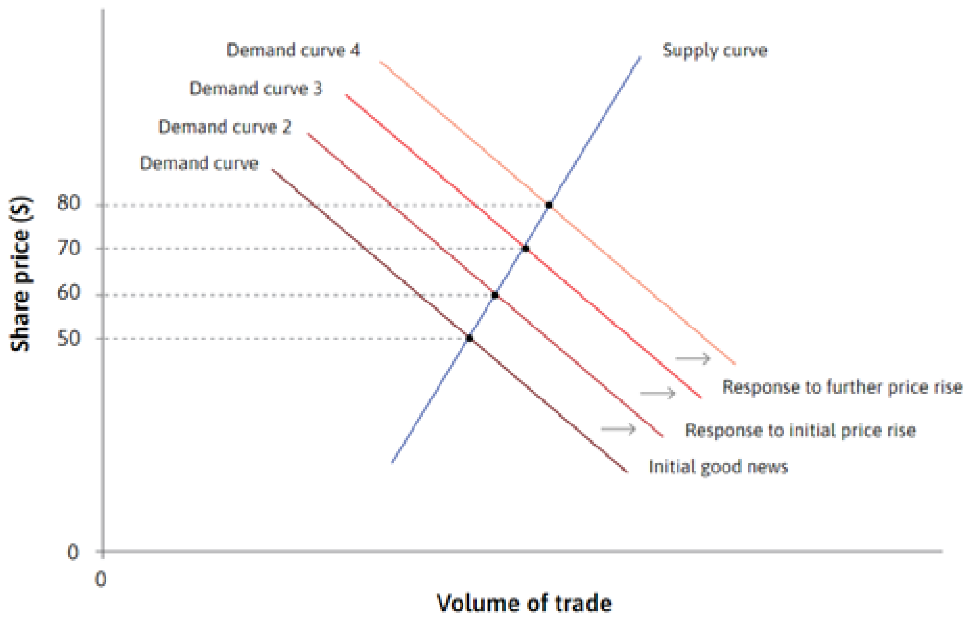

Figure 3.2 The beginning of a bubble in FCC shares.

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 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.

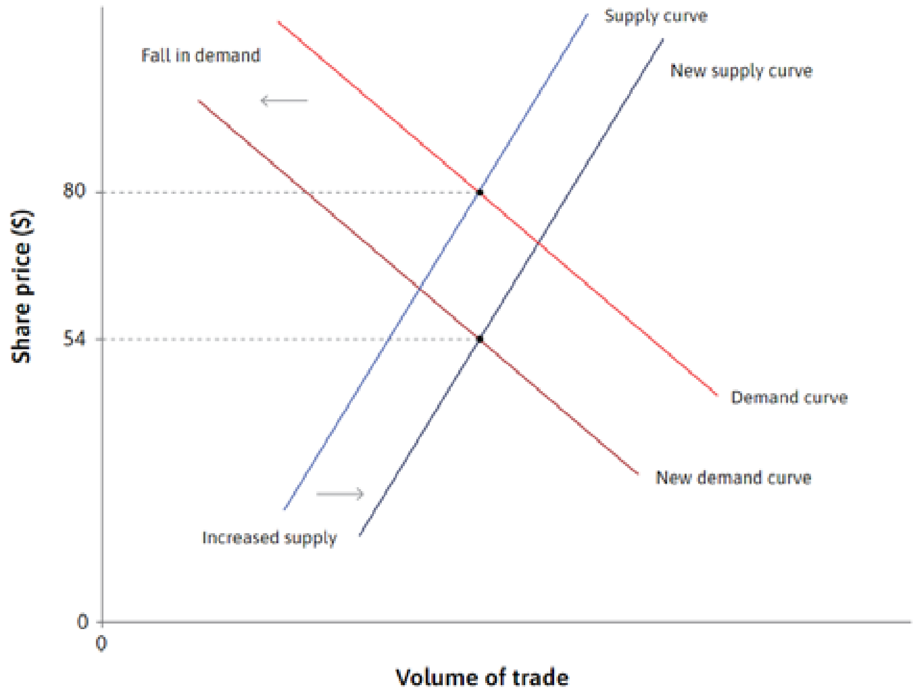

Figure 3.3 The collapse of FCC's share price.

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 identified 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 short[7] (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.

<u>Questions 63-70 are based on Material III.</u>

63. 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

[7] 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.

64. A bubble in asset prices is usually followed by a _____.
A) crash
B) revolution
C) depression
D) recession

65. The tech bubble happens in _____.
A) 1998-1999
B) 1999-2000
C) 2000-2001
D) 2001-2002

66. 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.

67. 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

68. 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.

69. 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.

70. 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.

Answer Keys:

63. C
64. A
65. B
66. B
67. A
68. C
69. C
70. A

Thinking and Innovation

Reducing Domestic GHG Emissions

Although shifts around the world are reducing the **greenhouse gases (GHG)** intensity of fuel use, growth in population, and especially rapid GDP growth in some countries, such as China and India, is leading to the continued global increase in GHG emissions. In a sense there are two fundamental choices for this problem:

- **mitigation**: refers to taking steps today to reduce GHG emissions so as to delay or reduce global temperature increases.
- **adaptation**: refers to the efforts of future generations to adjust in ways that will substantially reduce the negative impacts of these temperature increases.

Because CO2 is the main GHG, we focus on the issue of reducing global CO2 emissions. It needs to be recognized, however, that there are many things that could be done to mitigate CO2 emissions, and that these come at different costs. It is very important, therefore, to keep the concept of **cost-effectiveness** clearly in mind when developing contemporary mitigation steps. Effective global action to combat global warming will require individual countries to undertake steps to reduce their GHG emissions. The question is: **How should this be undertaken?** In the short run, say over the next 20 years or so, the emphasis will be on getting increases in fuel conservation and efficiency, switching to lowcarbon fuels, and reducing the use and emissions of chemicals with high greenhouse impacts.

Cost to Reduce GHG Emissions

Given the long histories of command-and-control policies in the United States and other countries, many are likely to be attracted to technology or emission standards. This has been the tradition in the United States (as well as most other countries), so first efforts here have been directed at subsidizing, or requiring, technology options. This is because there are really substantial differences among technical options in terms of GHG control costs.

Table 1 Cost-Effectiveness of Alternative Means of Reducing CO2, United States, 2030.

Means	Costs per ton of carbon dioxide equivalent ($ CO_2e)
Coal-fired power plants, carbon capture storage	55
Afforestation of pasture land	15
Nuclear power	10
Residential efficiency	47
Fuel economy, light trucks	−70
Fuel economy, cars	−80
Active forest management	20
Commercial buildings, combined heat and power	−35
Onshore wind	20
Solar power	35

Table 1 shows some cost-effectiveness results obtained from a large study by the analysts at McKinsey and Company. Some cost figures that stand out are the low estimates for afforestation, as essentially an add-on to the current conservation reserve program, and the high costs of GHG removal through CO2 capture and storage. Afforestation is not an emission reduction method, but an attempt to augment the CO2-absorbing capacity of the earth's ecosystem.

Incentive-Based Approaches for Reducing GHG Emissions

Technical options are diverse and subject to change, and new ones will undoubtedly be found and developed. What is vitally important is that we have strong incentives permeating through the economy to bring about these changes. And this implies that the best policies to combating the greenhouse effect are ones that create strong incentives for reducing GHG emissions.

When there are substantial differences among sources and technologies in terms of the costs of reducing GHG emissions, the use of incentive-based policies can get a substantially bigger bang for the buck than traditional command-and-control policies. In the United States, and many other countries, therefore, analysts and policymakers are emphasizing the two major types of incentive-based approaches:

- **Cap-and-trade plan**: quantity-based plans, in which a quantitative limit is placed on emissions and prices are established on emission permit markets.
- **Emission taxes or charges**: price-based policies, where a monetary fee on emissions is set and the quantity of emissions is adjusted as polluters react to that fee.

71. One of the biggest impacts of global climate change will be in forestry and agriculture. The agricultural impacts will hit ______ harder.
A) developed nations
B) the western hemisphere
C) developing nations
D) the southern hemisphere

72. The quantity of GHG emissions depends on the following factors:
A) population.
B) energy use per person.
C) GDP per capita.
D) Both A and C.

73. As a specific approach to reducing the impact of green house gasses, mitigation refers to
A) new legislation that allows for lawsuits for those who do not comply with emission limits.
B) taking steps to reduce emissions today to delay or reduce global temperature increases.
C) adjustments to reduce the negative impacts of temperature increases.
D) protecting specific key resources from temperature increases.

74. In recent years, the most important factors in reducing CO2 emissions have been

A) population and GDP per capita.
B) energy use per person and CO_2 emissions per goods sold.
C) energy efficiency and CO_2 produced per energy used.
D) All of the above.

75. The United States and other countries have a long history of using _____. This approach will increase the cost of controlling GHG.
A) command and control policies
B) decentralized policies
C) incentive based strategies
D) market trading systems

76. Afforestation is an example of _____.
A) an emission reduction method
B) augmenting the CO_2 absorption capacity of the ecosystem
C) a technology standard
D) a CO_2 capture and storage method

77. Which of the following statements is FALSE based on Table 1?
A) The costs of achieving greater fuel efficiency for cars and trucks are negative.
B) The most costly methods is coal-fired power plants, carbon capture storage.
C) How much it costs to dramatically reduce GHG emissions depends on how it is done.
D) All listed methods aim to eliminate greenhouse gases without considering energy cost savings.

78. When there are substantial differences among sources and technologies in terms of the costs of reducing greenhouse gasses, the use of _____ is more cost effective than the use of _____.
A) incentives; fines.
B) fines; incentives.
C) incentive based policies; command and control policies.
D) command and control policies; incentive based policies.

79. Two incentive based programs that might be considered to control GHG are
A) emissions standards; technology based standards.
B) cap and trade programs; emission taxes/charges.
C) bag and tag programs; cap and trade programs.
D) shifting away from meat consumption; CAFÉ standards.

80. A price-based policy, where a monetary fee on emissions is set and the quantity of emissions is adjusted as polluters react to that fee, is called _____.
A) bag and tag program
B) cap and trade
C) emission tax
D) emissions standard

Answer Keys:

71. C
72. D
73. B
74. C
75. A
76. B
77. D
78. C
79. B
80. C