

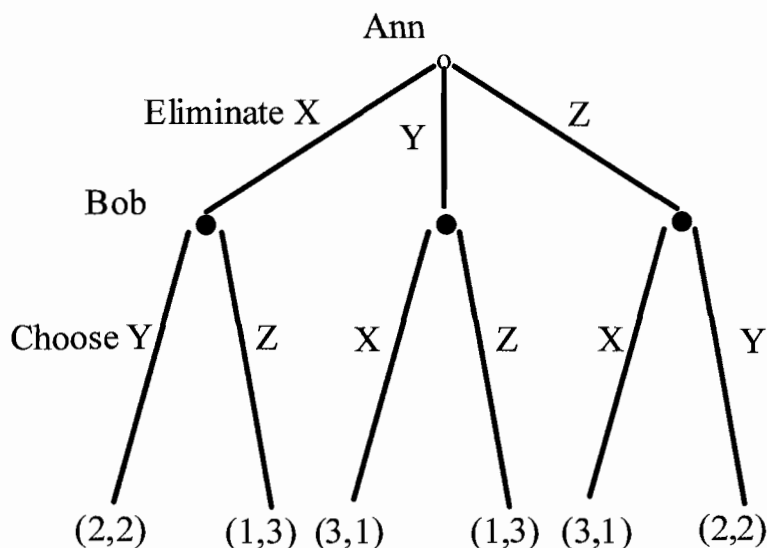
3E1 2009 crib

1 (a) Two individuals, Ann and Bob, have to decide which of three possibilities X, Y and Z, to choose. They employ the following procedure: Ann first eliminates one of the possibilities and then Bob chooses between the remaining two. It is known that Ann prefers X to Y and Y to Z, while Bob prefers Z to Y and Y to X.

Represent this situation as an extensive form game and then find its solution using backwards induction, explaining your reasoning carefully.

[40%]

This situation can be represented by the following extensive form game:



N.B. Payoffs are represented by utilities. Ann's payoff is shown first in each case.

By backwards induction the outcome of this game is that Ann chooses to eliminate Z and Bob then chooses Y. To show this, argue that:

- If Ann eliminates X Bob will choose Z, resulting in payoffs (1,3);
- If Ann eliminates Y Bob will choose Z, resulting in payoffs (1,3); and
- If Ann eliminates Z Bob will choose Y, resulting in payoffs (2,2).

Hence Ann does best by choosing to eliminate Z at the start.

A very good answer might also briefly explain the rationale behind backwards induction, particularly the assumptions of rationality and common knowledge of rationality.

(b) Explain the impact of the following on the level of consumption:

(i) a temporary reduction in indirect taxes (such as VAT); [15%]

A reduction in indirect taxes will have both an income and a price effect. In terms of the income effect, with a Keynesian consumption function, consumption will rise as current real income has risen. However, with a Life Cycle or a Permanent Income function, there will be little impact as a temporary reduction in indirect taxes will have only have a small impact on long-term income. In terms of the price effect the change should encourage consumers to bring forward intended consumption.

(ii) an anticipated rise in the level of unemployment. [15%]

This should cause a fall in current consumption. With the Keynesian consumption function this can be explained by the impact of increased uncertainty. With a Life Cycle or a Permanent Income function, it can be explained by an anticipated fall in long-run income with which will reduce current consumption.

(c) Using the life cycle hypothesis explain the probably current consumption and saving behaviour of a middle-aged professional whose current annual income is the highest that they earned during their working life and who expects to retire in 10 years time. [30%]

The life cycle hypothesis emphasises that individuals try to smooth their consumption during their lifetime although their income will vary over time. This suggests that the current income of middle-aged professionals should be significantly greater than their long-run income. Thus they should have repaid previously accumulated debts and their current level of savings should be high in order to provide an income to sustain consumption during retirement. Candidates may also consider the problems of uncertainty (over expected lifetime and interest rates) and liquidity constraints.

2 (a) Explain the meaning of each of the following terms in consumer theory:

(i) perfect complements; [15%]

(ii) an inferior good; [15%]

(iii) a Giffen good. [20%]

i) A consumer regards two goods as perfect complements if he or she always chooses to consume these goods in the same fixed proportion. For example, if a consumer always wishes to have shoes in pairs, with one left shoe to go with each right shoe, then he or she regards left shoes and right shoes as perfect complements (here the fixed proportion is 1:1). Alternatively a consumer might like two sugar lumps in each cup of tea and thus regard tea bags and sugar lumps as perfect complements (here the fixed proportion is 2:1).

Indifference curves for goods that are perfect complements are L-shaped (diagram in lecture notes), with the “corner” of each indifference curve reflecting the fixed proportion (since away from this preferred proportion the consumer gets no additional utility by having more of one of the goods without any more of the other).

ii) An inferior good is one for which quantity demanded falls as income rises. Inferior goods are therefore opposite to ‘normal’ goods, for which quantity demanded rises as income rises. Inferior goods have a downward sloping Engel curve (diagram in lecture notes). Examples of inferior goods include low-quality goods such as supermarket own-brand products, which consumers move away from as incomes increase.

iii) A Giffen good is one for which quantity demanded rises with a rise in its own price (or, equivalently, quantity demanded falls with a fall in its price). By decomposing the effect of a price change into income and substitution effects, it can be shown that a Giffen good must be strongly inferior such that the income effect of a price change more than offsets the substitution effect. Use the Giffen diagram in the lecture notes to explain this.

(b) Explain the concept of comparative advantage. [15%]

The theory of comparative advantage explains why it can be beneficial for two countries to trade, even though one of them may be able to produce every kind of item more cheaply than the other. What matters is not the absolute cost of production, but rather the ratio between how easily the two countries can produce different goods or services. Better students will use a diagram to illustrate their answer and may note recent extensions to the model such as the Heckscher-Ohlin Theorem.

(c) Discuss which factors may cause shifts in comparative advantage. [15%]

Costs of production (employment costs, cost of capital)

Comparative advantage is a dynamic concept – every country experiences shifts in comparative advantage over time. Candidates should discuss such factors as: changes in costs of production; shifts in productivity of factors of production; investment in research and development; changes in non-price competitiveness of producers; movements in the exchange rate; and the impact of import controls - tariff & non-tariff barriers (which create an artificial change in comparative advantage).

(d) Critically evaluate two economic arguments for protectionism. [20%]

Candidates should consider two of the following:

- Changing comparative advantage – such as the infant-Industry Argument
- Balance of Payments Adjustment – to reduce Balance of payments deficits. The desire to control the growth of imports to improve the trade balance
- Response to Dumping – as a response to the predatory pricing by overseas suppliers and the off-loading of excess capacity at below cost-price.
- Employment protection – the fear of structural unemployment in declining sectors (due to the occupational immobility of labour and capital). To reduce the social costs of unemployment resulting from increased import penetration in particular industries.
- Desire to increase government revenue by imposing a revenue tariff.

Candidates should outline potential problems of protectionism such as:

- Welfare losses for consumers (higher prices).
- World multiplier effects from reduction in trade.
- The threat of retaliation “beggar thy neighbour policies” – and the loss of exports.
- Import controls cushions producer “X” inefficiency – in this sense, import controls act as a “barrier to entry” in a market.
- Increased bureaucracy of administering import controls.

3 (a) State the first and second fundamental theorems of welfare economics. [15%]

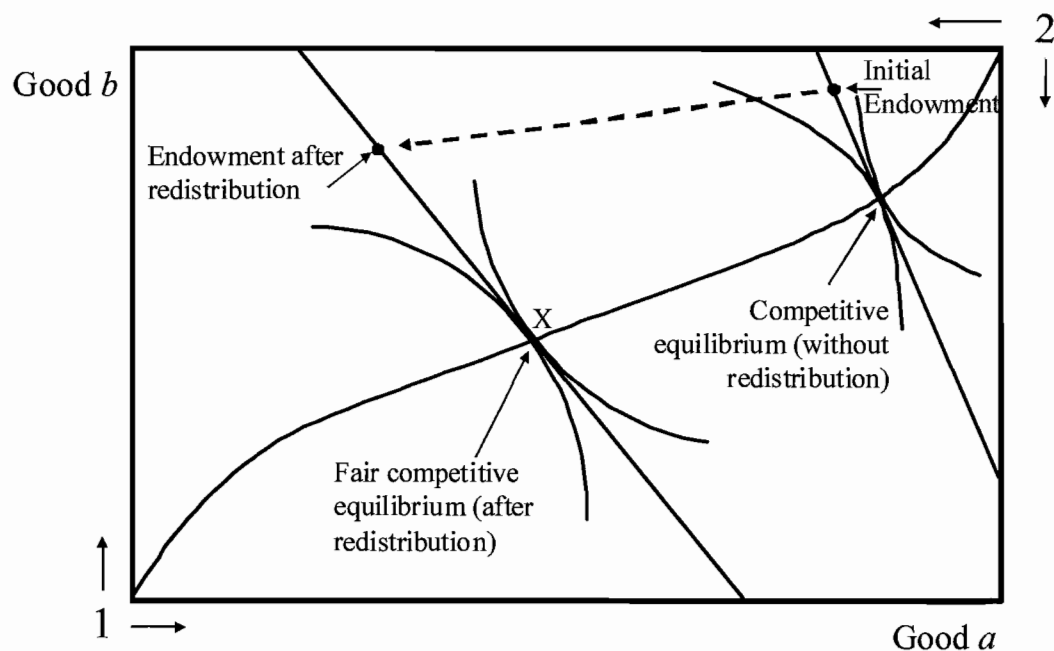
The First Fundamental Theorem of Welfare Economics states that in the absence of distortions (and hence market failures) any competitive equilibrium will be Pareto efficient. The Second Fundamental Theorem states that if all agents have convex preferences, then

there will always be a set of prices such that each Pareto efficient allocation can be established as a competitive equilibrium given an appropriate assignment of endowments.

(b) 'The second fundamental theorem of welfare economics demonstrates that equity is compatible with efficiency.' Using an Edgeworth Box diagram, explain this statement [35%]

While the first welfare theorem shows that a set of competitive markets will bring about Pareto efficiency, it says nothing about whether the equilibrium allocation will be equitable. If it holds, however, the second theorem does indeed imply that a competitive economy is compatible with both efficiency and equity. The key idea is that the second theorem implies that society can choose which efficient allocation it deems equitable and (provided individuals' endowments can be redistributed) then use competitive markets to bring about the chosen efficient allocation.

Consider the simple exchange economy (containing two individuals, 1 and 2, and two goods, a and b) depicted in the following Edgeworth Box diagram:

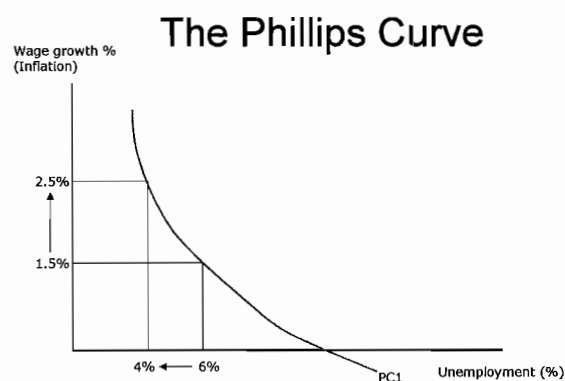


The initial endowment in this economy is extremely unbalanced (individual 1 has considerably more of both goods) and consequently the resulting competitive equilibrium allocation is clearly not equitable. Suppose that society considers point X to be a fair outcome. Then provided endowments can be redistributed from individual 1 to individual (as shown), point X can be brought about as a competitive equilibrium. Hence equity is compatible with efficiency, as the statement in the question claims.

A very good answer would also point out some of the problems with this argument. One issue here is simply the informational requirements: is the government easily able to measure each individual's endowments, compute the set of efficient allocations and calculate the necessary redistributions? A second issue is that the argument relies on the possibility of redistributing endowments via lump-sum taxation, something that is not always feasible (it is difficult, for example, to redistribute human capital). In the absence of lump-sum taxation, redistribution is likely to be via forms of taxation which are likely to distort the price system.

- (c) Using an appropriate diagram, explain the concept of the Phillips Curve. [15%]

As shown below, the Phillips Curve shows an inverse relationship between inflation and unemployment. It suggested that if governments wanted to reduce unemployment it had to accept higher inflation as a trade-off.



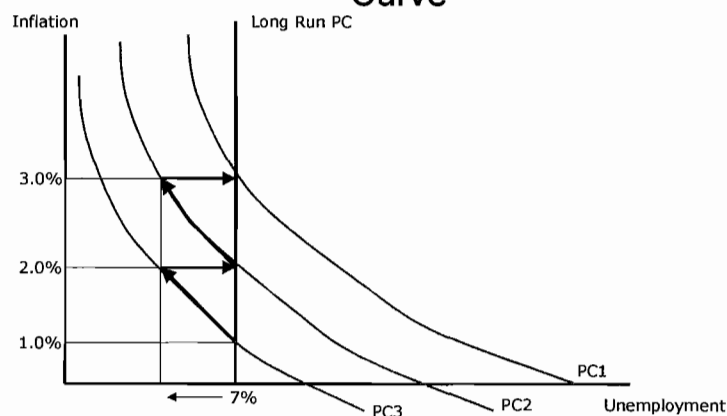
- (d) Explain why the Phillips Curve relationship broke down during the 1970s. [15%]

In the 1970s there was rising unemployment and rising inflation (stagflation) which is inconsistent with the Phillips curve model. Monetarists suggested that inflation is demand determined – where monetary growth is excessive. Whereas, unemployment will settle at its ‘natural rate’ in the long-run which will be determined by how efficiently the labour market is operating. So, for monetarist, the collapse of the Phillips curve was caused by excessive monetary growth causing inflation and strong trade unions causing unemployment. Alternatively, some Keynesians suggested that although unemployment was demand determined inflation was due to ‘cost push’ factors.

- (e) Using an appropriate diagram, explain the concept of the Expectations Augmented Phillips Curve. [20%]

With the Expectations Augmented Phillips Curve there is only a short-run inflation/unemployment trade-off. In the long run, equilibrium can occur at any rate of inflation, provided that the expected rate of inflation is equal to the actual inflation rate (see below). Attempting to push unemployment below the equilibrium rate of unemployment will lead to accelerating inflation. Lowering the rate of inflation requires a period of sustained unemployment above the equilibrium rate until expectations of inflation have been revised downwards.

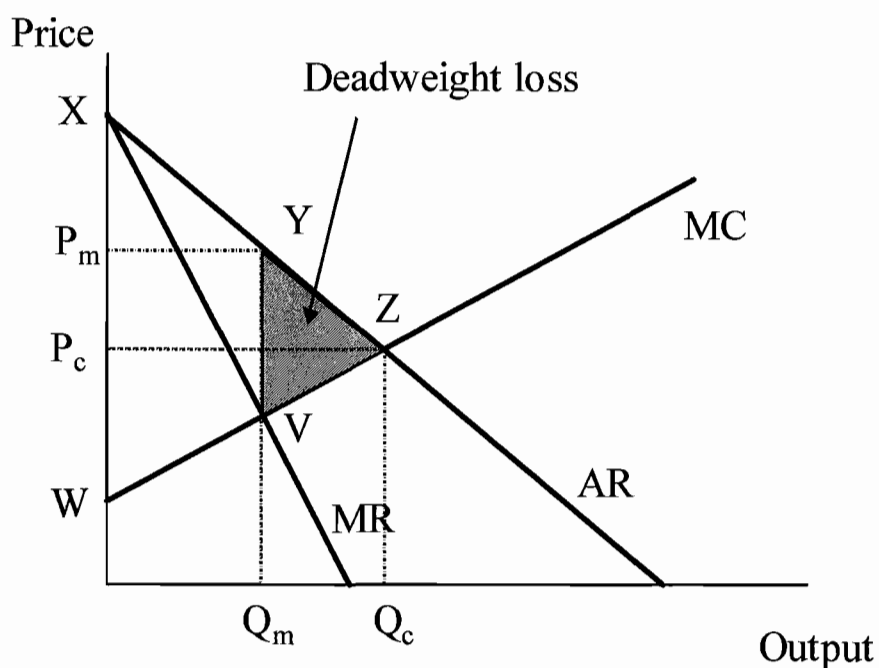
The Expectations-Augmented Phillips Curve



- 4 (a) What do economists mean by the term deadweight loss of a monopoly? [25%]

The deadweight loss of a monopoly is the sum of the changes in consumers' surplus and producers' surplus associated with a monopolistic industry compared to a competitive one. It can be thought of as a measure of the cost to society of the lower output (and higher price) associated with a monopoly.

Use the diagram in the lecture notes to explain:



If this industry is competitive, output is Q_C and price P_C . If it becomes a monopoly, output falls to Q_M and price rises to P_M .

The move to monopoly causes consumers' surplus to decrease from XP_CZ to XP_MY and producers' surplus to increase from WP_CZ to WP_MYV . The deadweight loss, the combined change in consumers' and producers' surplus, is therefore VYZ . In effect this is a measure of the cost to society of the units Q_M to Q_C no longer being traded.

(b) Suppose that a monopolist faces the following demand for its output:

$$q = 40 - 2p$$

where q is the quantity demanded and p is price. The monopolist's average cost of producing q units is given by:

$$AC = 10 + 2q$$

- (i) Derive an expression for the monopolist's profit as a function of its output. [15%]
- (ii) What is the monopolist's profit maximizing output? How much profit does the monopolist make? [15%]
- (iii) What level of output would maximize the monopolist's total revenue? [10%]

i)

Profit is defined as total revenue (TR) minus total cost (TC), so to find the profit expression we first find expressions for TR and TC.

Given the demand function

$$q = 40 - 2p$$

Then the inverse demand function is

$$p = 20 - \frac{1}{2}q$$

Thus the total revenue function for the firm is:

$$TR = pq = (20 - \frac{1}{2}q)q$$

$$TR = 20q - \frac{1}{2}q^2$$

Now given the average cost function

$$AC = 10 + 2q$$

Then the total cost function is

$$TC = 10q + 2q^2$$

Hence the profit function is

$$\pi = TR - TC = (20q - \frac{1}{2}q^2) - (10q + 2q^2)$$

$$\pi = 10q - \frac{5}{2}q^2$$

ii) Profit maximizing output is found via the first order condition

$$d\pi/dq = 0$$

$$10 - 5q = 0$$

Thus profit maximizing output is

$$q = 2$$

Maximized profit is thus

$$\pi = (10 \cdot 2) - \frac{5}{2} \cdot 2^2$$

$$\pi = 10$$

iii)

To maximize total revenue find the output such that

$$dTR/dq = 0$$

$$20 - q = 0$$

$$q = 20$$

(c) Discuss the possible impacts of the Single European Market and the Single European Currency on economic growth in the European Union. [35%]

The single European market is intended to improve the efficiency of markets and raise economic growth in the European Union (EU). Companies can sell their products anywhere in the member states and consumers can buy where they want with no penalty. Workers of the member states can live and work in any other country and their professional qualifications should be recognised. Currencies and capital can flow freely between the member states improving the operation of financial markets. The single market seen by

some as a “positive sum game” as it should enhance productivity throughout Europe. It should lead to more intensive competition, a more efficient allocation of resources and European businesses should be better able to exploit economies of scale by selling with a much larger single market. There is concern, however, that not all parts of the EU may benefit from the single market – particularly in capital and labour moves from ‘weaker’ regions to ‘stronger’ regions.

The single European currency (the EURO) should reduce the cost of trade and improves price transparency. This should lead to more efficient single European market and an increase in economic growth. The macroeconomic benefits are that it should lead to lower and stable inflation and a lower ‘sacrifice ratio’ (the unemployment cost of reducing inflation). There are concerns, however, that the single currency may harm the growth in some parts of the EU as individual countries will lose the policy flexibility to change their exchange rates and interest rates in response to a negative shock.