Dr M Kitson

3E1 EXAM QUESTIONS 2008

Question 1:

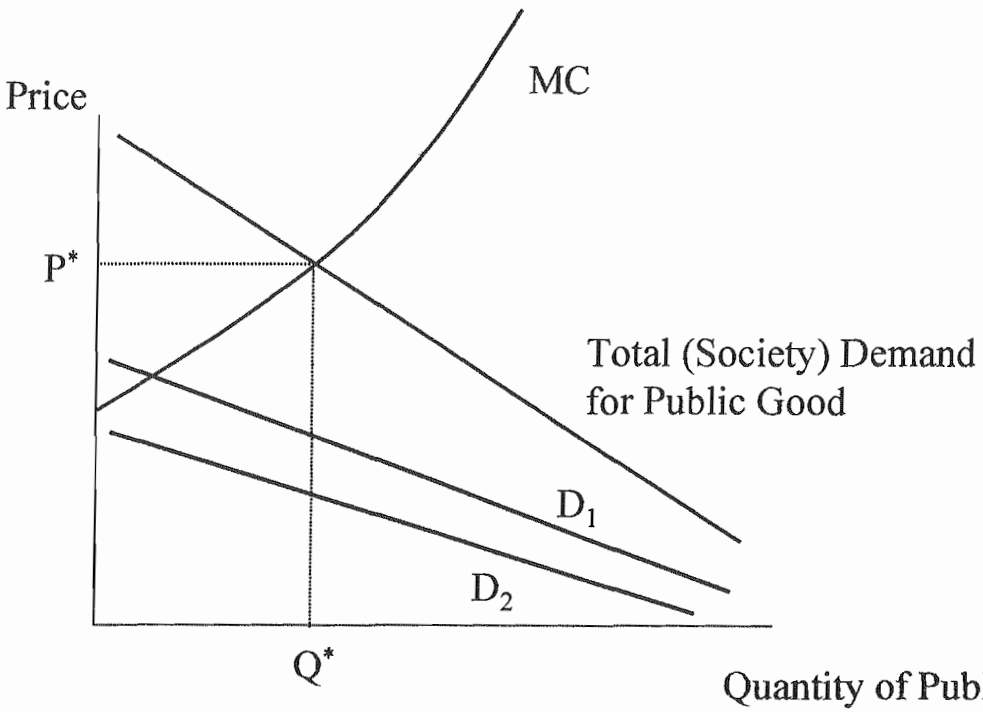
a). What do economists mean by the term *public good*? [15%]

Public goods have two defining characteristics: they are non-rival and non-excludable. Non-rival refers to the fact that consumption by one person does not reduce the amount available for consumption by any other person. Non-excludable means that it is impossible (or at least prohibitively expensive) to exclude any person from consuming it once it has been provided. Public goods may be contrasted with private goods, which are both rival and excludable

b) Why do public goods result in market failure? [35%]

Market failure means that a private market is likely to result in an inefficient level of provision of the good.

To explain why public goods are associated with market failure, first characterise the efficient level of provision of a public good. This is most easily done with the following diagram (taken from the lecture notes):



Society's demand curve for a public good is the vertical summation of individual consumer's demand curves (since the non-rival property implies each consumer's marginal willingness to pay (MWP) for the good should be added up to obtain society's MWP for each unit). Efficient provision occurs at Q*, where the societal demand curve and the MC curve intersect.

There are two main reasons why a private market is unlikely to supply Q* of a public good. Both are discussed in lectures. First, individuals have an incentive to free-ride and to purchase little (if any) of the good knowing they will be able to consume the units purchased by others. If such free-riding is the dominant strategy for all consumers, little of the good is likely to be provided. Second, even without free-riding, a private market does not provide a mechanism for aggregating individual consumer's preferences (i.e. their MWP for each unit). In the above diagram, if the supplier acts competitively and supplies along the MC curve, consumer 1 will purchase a small amount of the good and consumer 2 nothing. Yet in order for the efficient level of provision (Q*) to be obtained there needs to be some mechanism for aggregating consumers' preferences.

c) Outline the key features of the neoclassical endogenous model of economic growth. [35%]

There are many alternative forms of endogenous growth theory. In the early models the key intuitive idea behind them was the absence of diminishing returns to capital (in contrast to exogenous growth models). Many later models have retained the notion of diminishing returns to a factor but have stressed the importance of externalities or spill-overs which can lead to endogenous growth. In the exogenous model, savings leads to growth temporarily, but diminishing returns to capital force the economy to the steady state growth path that depends on exogenous technological change. In contrast, with endogenous growth, investment can lead to persistent growth.

Many endogenous growth models employ a `broad' notion of capital including knowledge.

d) What are implications of the endogenous model of economic growth for government policy? [15%]

Endogenous growth models may suggest divergences in growth: with fast growth in countries that invest in the key areas (eg. education, skills, R&D and so on). The problems that policy makers have is how to identifying the key sectors and how to measure the extent and form of externalities.

Question 2:

a) What are the *axioms of choice* and what role do they play in the rational agent model of the consumer? [25%]

The axioms of choice are three fundamental assumptions made about individual's preferences in the rational agent model of consumer choice. The axioms are completeness, transitivity and reflexivity.

Completeness requires that any pair of consumption bundles can be compared, such that for any pair of bundles A and B either: A is preferred to B, B is preferred to A, or A is indifferent to B.

Transitivity is a consistency requirement. It states that given any three bundles A, B and C, if A is considered at least as good as B, and B at least as good as C, then A must be at least as good as C.

Reflexivity requires that a bundle is indifferent to itself.

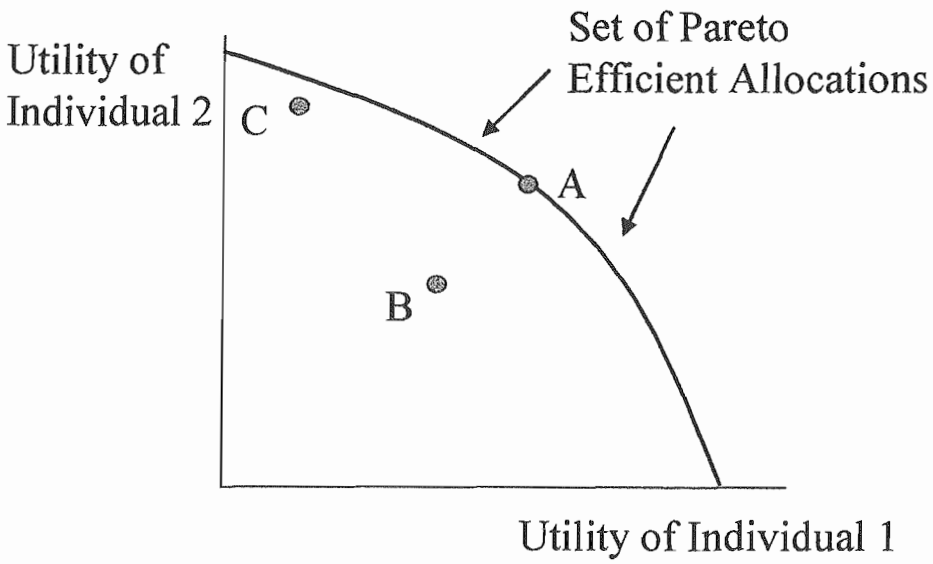
The role of the three axioms is to ensure that a consumer can generate a complete and consistent ranking of all possible consumption bundles. This ranking is called a preference ordering and summarises the consumer's tastes in the rational agent model.

b) 'A Pareto efficient allocation is Pareto superior to all Pareto inefficient allocations'. Is this statement true or false? Explain your answer. [25%]

This statement is false.

Begin by defining Pareto superiority and Pareto efficiency. A resource allocation, X, is said to be Pareto superior to another resource allocation, Y, if every individual is at least as well off in X compared to Y, and at least one person is strictly better off in X. An allocation is Pareto efficient if there exist no other feasible allocation that is Pareto superior to it. Allocations that are not Pareto efficient are Pareto inefficient.

To demonstrate that the statement in the question is false a utility possibility frontier (UPF) diagram is helpful (or similarly an Edgeworth Box diagram). The lecture notes contain both.



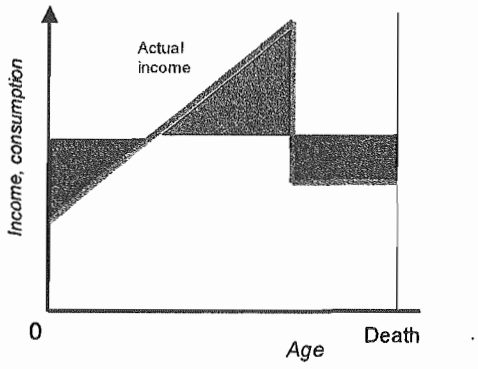
Recall, feasible allocations in this economy are those on or below the UPF.

First note that Pareto efficient allocations are those on the UPF – since for these allocations there are no feasible Pareto superior allocations (neither individual can be made better off without harming the other). All allocations

below the UPF are therefore inefficient. Then consider allocations A, B and C. A is efficient, B and C are inefficient. Yet while A is clearly Pareto superior to B (as both individuals are better off at A), A is not Pareto superior to C, since individual 1 is better off at A while individual 2 is better off at C. In general then, a Pareto efficient allocation need not be Pareto superior to all Pareto inefficient allocations.

c) Explain the life cycle hypotheses of consumption. [25%]

With this hypothesis consumption is regarded as a constant proportion k of Yp. The LCH emphasises the age of the consumer, and proposes that he/she attempts to smooth consumption over a lifetime in which income fluctuates widely. Income varies over an individual's lifetime. Individuals try to smooth their consumption, based on expected lifetime income with dissaving in youth and old age (see below).



d) Outline two potential weaknesses of the life cycle hypothesis. [15%]

1. Assumes consumers know their future income
2. Assumes consumers know their life span
3. No liquidity constraints – that is consumers can easily borrow when they wish to do so.

d) Assuming that the life cycle hypothesis is correct, describe the impact of temporary increase in income tax on the level of consumption. [10%]

This should have little impact as although it will increase current income it will only have a small impact on long -term income. The important point is to emphasis is that the increase is *temporary* and may be reversed in the future.

Question 3:

a) Briefly explain the distinction between *total*, *average* and *marginal* costs for a firm. [10%]

Total costs are the (minimum) cost of producing some level of output Q. Average cost is total cost divided by output (and therefore measures 'unit' costs). Marginal cost is the rate of change of total cost with respect to a small change in output.

b) 'A firm should cease production in the short-run when its losses exceed its fixed costs'. Is this statement true or false? Explain your answer. [25%]

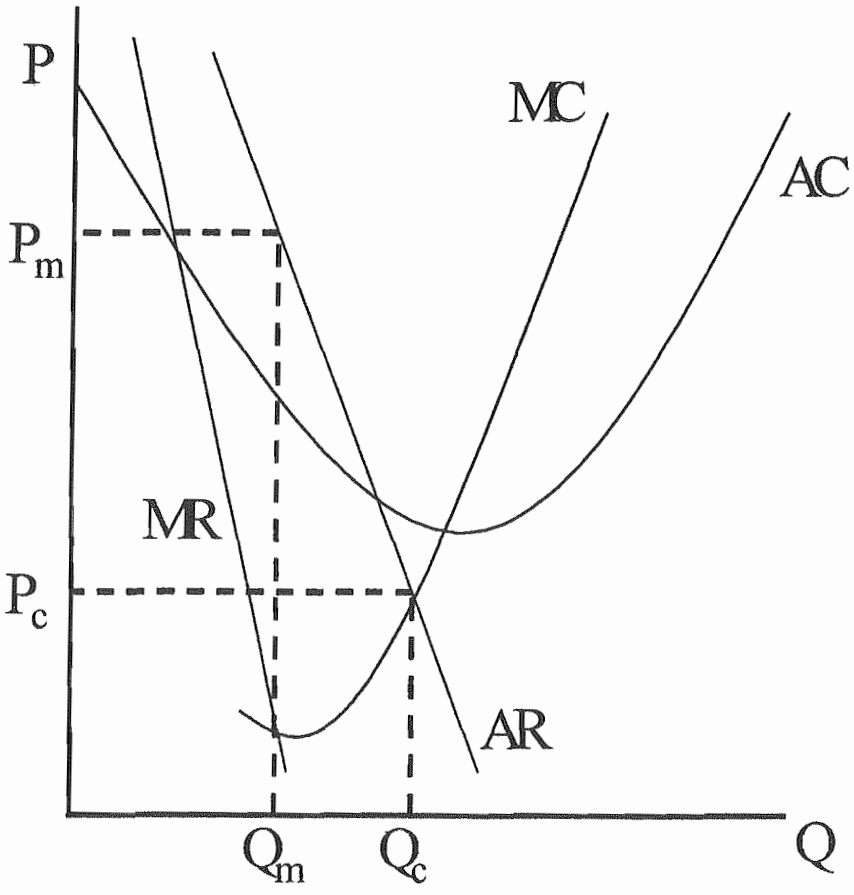
This statement is true and is merely one way of stating the short-run "shut down" condition for a profit-maximising firm that is described in lectures.

The SR shut down condition states that a firm should cease operating in the short-run if it is unable to pay for its variable costs. The rationale for this is that in the short-run a firm will incur its fixed costs regardless of whether it produces any output or not. Thus a firm that produces nothing will make a loss equal to its fixed costs. If, by producing a positive output, the firm can

generate sufficient revenue to at least cover its variable costs of production, then its losses will be smaller than its fixed costs (since its revenues cover variable costs and some part of fixed costs). Otherwise losses will exceed fixed costs (the case in the question) and the firm should therefore cease production.

c) Using a suitable diagram, explain what economics mean by the term *natural monopoly.* [25%]

A natural monopoly tends to arise where production of a good is characterised by large economies of scale (falling average costs) throughout all relevant levels of output. Typical examples include network industries (gas, electricity, water etc.), which exhibit large fixed costs (the network) but very low marginal costs. The diagram below depicts a natural monopoly – note that AC is diminishing for all levels of demand.



The market structure for such goods will tend to be monopolistic, since once one firm is operating in the market no other firm is likely to be able to enter. The result is the usual monopoly outcome – price (Pm) is higher than the competitive price (Pc), output (Qm) is lower, and the market is Pareto inefficient.

d) Discuss the potential advantages and potential disadvantages of a single European currency. [40%]

The possible advantages include:

- Reduces the cost of trade – lower transaction costs when exchanging currencies.
- Improves price transparency – as with one currency, consumers can easily see price differences.
- Lower and stable inflation – with the European Central Bank committed to delivering effective monetary policy.
- Lower 'sacrifice ratio' – if the ECB acquires credibility it will be able to ensure that counter-inflationary policy will only have a modest adverse impact on unemployment and economic growth.

The possible disadvantages include:

- Lack of Flexibility – one monetary policy and one exchange rate policy for all of the Euro area may lead to a lack of flexibility as some part of the Euro Area may need expansionary policy while other parts may need contractionary policy.
- Two speed Europe – the policy could lead to a two speed Europe with the strong parts getting stronger and the weak parts getting weaker.
- Slow growth – the focus on inflation may lead to an over contractionary policy and slow growth.

Question 4:

a) Briefly explain what is meant by *game theory*. [20%]

Game theory is the branch of economics that studies decision-making in strategic situations. A situation is strategic if the outcome or 'payoffs' to actors' decisions depend not only on what they themselves do, but also on what others do. In such situations actors have to think through what others will do in order to work out what they themselves should do, in the knowledge that others are doing the same.

The case of firms operating in oligopolistic markets provides a good example. With only a few competitors, each firm has to think about how other firms will respond to its actions. In a competitive market this is not the case.

b) Carefully explain the dilemma that the two players of a Prisoners' Dilemma game face. Why is this game of interest to economists? [40%]

The Prisoners' Dilemma is discussed in lectures. The classic description of the game sees two ex-convicts arrested by police on suspicion of carrying out a spate of burglaries in a particular neighbourhood. The police lack the evidence to charge the pair with the burglaries immediately, so instead hold them in separate cells and offer each the chance to confess to the crimes in return for a reduced sentence. Each is told that if they both continue to deny the crimes, they will be charged with the lesser crime of possessing stolen goods, which carries a 1-year prison sentence. If both confess, each will receive a 5-year sentence for the multiple burglaries. However if one confesses to the crimes while the other denies, then the on who confesses will be released without charge while the other will be sentenced to the maximum term of 10 years.

The normal form representation of the game (with payoffs shown as utilities rather than years in jail) is as follows:

		1	
		Deny	Confess
2	Deny	2,2	0,3
	Confess	3,0	1,1

c) Explain how the concept of comparative advantage shows that there may be welfare gains through international trade. [20%]

The principle of comparative advantage explains how trade is beneficial for all parties involved as long as they produce goods with different relative costs.

Comparative advantage may be explained with an example. Suppose the production possibilities of two countries are:

		Kilos of Wheat	Metres of cloth
LDC	either	1000	500
DC:	either	1200	2400

The pre-trade exchange ratios of wheat for cloth are then:

LDC	2 for 1
DC	1 for 2

Although the DC has an absolute advantage in the production of both goods, the LDC has a comparative advantage in the production of wheat. Providing that the countries can trade at an exchange ratio somewhere between 2:1 and 1:2 they will both gain from trade. Suppose that exchange occurs at a rate of 1:1 Assume that the opportunity costs of cloth in terms of wheat do not vary with output: the production possibilities frontiers will be straight lines. Suppose that before trade the LDC was consuming 200 units of wheat and 400 units of cloth, and that the DC was consuming 400 units of wheat and 1600 units of cloth. By specialising in the product in which they have a comparative advantage and then trading, both countries could do better than this.

d) Explain the concept of the law of one price. [20%]

The law of one price is the notion that identical commodities sell at same price no matter where they are sold. It is based on the idea of arbitrage. It is limited as it price may differ because of transportation costs, border effects (tariffs, non-tradeables, etc.). It is usually measured by some form of the real exchange rate, and there may be further deviations from the law of one price as goods prices are often considered "sticky" whereas nominal exchange rates can change rapidly.