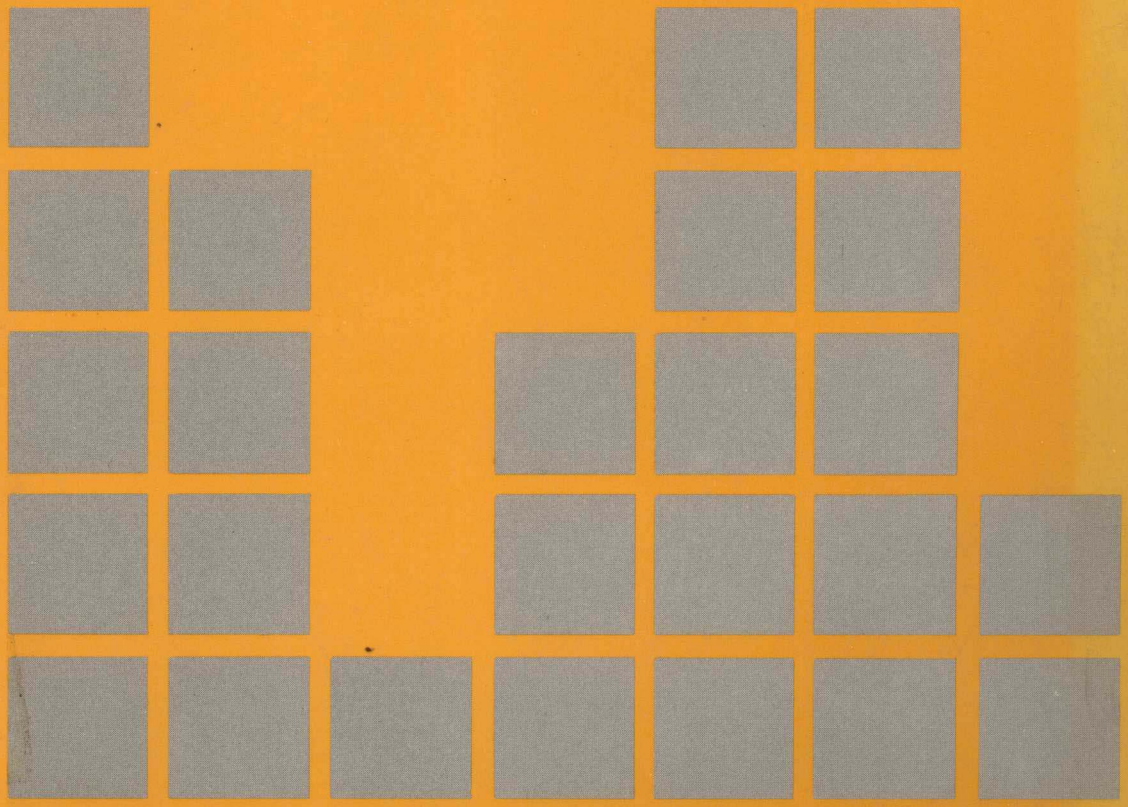
CASEBOOKS ON ECONOMIC PRINCIPLES

MARKET ANALYSIS

Andrew Leake



Casebooks on Economic Principles

MARKET ANALYSIS

Andrew Leake
Head of Economics
Latymer Upper School, Hammersmith

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1 Introduction

Theory and practice

Learning to drive a car is not easy. You may read all the books, be told what to do by your instructor, and still not be able to do it all by yourself. It takes theory and practice together.

So it is with economics. The theory explains in general terms what should be happening. It takes all possibilities into account. It can be learned from teachers or from textbooks.

For most of us, however, the appeal of economics lies in the practical side of the subject. Just as we want to be able to drive a car for ourselves, so we want to be able to consider and understand the economic problems we see in the real world. It is the purpose of this, and the other Casebooks, to consider theory and practice side by side.

Stage by stage

You have to do many different things to drive a car. You have to control the steering, the accelerator, the brakes and the gears. Although you will use them all together in the end, it helps if you can try them one at a time at the start.

It is the same with economic theory. We need to understand many different ideas and the connections between them. By taking ideas one at a time, from each area of the subject in turn, we will eventually have built up a complete picture.

So it is the approach in this, and the other Casebooks, to study each important principle in a separate section, and to consider economics stage by stage.

How to use this Casebook

Each section considers a particular aspect of economic behaviour. It does this in three ways. First there is a brief outline of the general principles involved. Next there is an illustration of the way those principles apply in the real world. Finally there are questions based on the issues raised in the section, and arising from the material studied.

The outline of theory is a concise summary of work that has already been covered. It does not develop the general theory to any great depth, but restates and reinforces the most important aspects of each economic principle. It aims to provide a complete preparation for all that follows in the section and in the rest of the Casebook.

The applications are of individual principles rather than of broad topics. Their use will be in making practical sense of abstract ideas and in providing examples to illustrate theoretical points. They are the sort of decisions that are made by individuals and governments each day: things that matter to all of us.

It is hoped that this material will be of interest both for its economic content and in its own right.

Market analysis

The step-by-step approach of economic theory applies particularly in the analysis of markets. It is reflected first in the separation between markets. Every type of exchange that takes place in the economic system is studied on its own terms. The markets for all goods, services and factors of production are seen as being quite distinct from each other.

In addition the behaviour of each market is explained, step by step, in a sequence of ideas. It is as if we were building a tower of bricks. Each brick must be set firmly upon the previous one. First ideas are most important – they provide a basis for what follows. Every idea must be well understood or the whole structure fails to make sense. Patience at each step along the way will be rewarded in the end.

2 First ideas

2.1 Resources and wants

Resources must be used to produce any type of economic good, but at any one time the amount of resources available for use is strictly limited. On the other hand, people's desires for goods and services are quite without limit. These propositions establish the fundamental problem that is the basis of all that follows in the study of economics.

World housing

It is more than likely that anyone with enough free time, education and motivation to make a study of economics will be part of the minority of the world's population that lives in houses. This is so not because a firm roof over one's head suddenly allows one to read, nor because the fundamental economic problem is only relevant indoors! It is so because poor living conditions lead to ill health, and social problems, often on a terrible scale.

In the face of such wide and daunting problems it is easy to miss the point that the central issue in world housing is purely economic. It is characterised by all the essential features of the fundamental economic problem: limited resources available with which to build houses throughout the world, but a desire for housing that appears to be quite without limit. The choices that have to be made, therefore, include decisions about the type and quantity of housing that should be produced, between housing and other consumer wants, and about which consumers are to be allocated housing and which are not.

Resources

The extract lists four types of resources that must be used to produce houses: 'land, labour and human enterprise as well as money'. With minor modifications, these are the four factors of production as they are usually described by economists. *Land* can be taken to include resources available from the land, as well as the particular area at which production occurs. Each house that is to be built will require both the plot of land upon which it is to be sited as well as the trees, mud, stone or whatever, that will be used in its construction. *Labour* will include the work of labourers on the site of the house as well as that of architects, planners and any others contributing.

Human enterprise is the factor *entrepreneurship* which takes a risk in starting the process of production, when it employs and organises all the other available resources. In the case of Third World housing projects this is a role that is often taken on by government or its agents.

Money is used to purchase the factor of production called *capital.* Money itself is incapable of producing anything but it can be readily exchanged for machinery, equipment and buildings, which are directly productive. Third World countries are often short of money with which to buy capital equipment, and are often not capable of producing the items of capital for themselves. If capital is the most scarce of all the four factors of production, then production decisions will need to reflect this state of affairs by adapting to 'low' technology and labour-intensive methods.

Each of these types of resources carries the crucial characteristics which distinguish factors of production from the products they create. *Factors* are hired to make things, and together they form a productive process. *Products* are made by some process or other, and are used later either in personal consumption, or as inputs in another productive process.

Wants

The extract makes it clear that a large number of people throughout the world want housing. Even if each person were to be provided with a roof over his head, these wants would still exist as people desire better and better houses, as world population expands and as existing houses need to be replaced. Thus, there would seem to be no effective limit to the desire for housing in the world as a whole. In Third World countries in particular, this insatiable desire can be seen reflected in the figures quoted in the extract – an estimated 3000 million people are expected to be in low-grade housing by the year 2000.

It is clear that people want housing, but to fully understand what this means, we must ask two questions about the nature of the 'want'. Firstly we must ask, 'How much do consumers want housing, compared with other things?' All choices in economics are between alternatives and it is only possible to want something more than, less than or as much as other things. Housing may take a high priority and be wanted a great deal, in which case it will be wanted

World housing

The problems of housing poorer people in developing countries are the subject of a new report from the Overseas Division of Britain's Building Research Establishment (B.R.E.). It has been prepared so that administrators, architects and social workers can better evaluate the needs and evolve practical programmes to meet them.

The report, *The World: Urban Housing*, was compiled for the B.R.E. by a specialist firm of London consultants, the Shankland Cox Partnership.

... It has been forecast that by the turn of the century the population of the developing countries will have doubled and that about half of this population – more than 3,000 million people – will be living in low grade rural housing or in continuously expanding urban squatter areas. ...

Human needs have not always been given priority over financial or structural considerations in matters of housing policy. And in some cases this has led to the creation of shanty towns – with a strong sense of community, but virtually no engineering or social services.

The need for a fundamental reappraisal is now being recognised. The new approach is to relate all resources available for housing to total housing need and then to adjust standards to achieve the best match possible instead of setting standards first and tailoring programmes accordingly.

Resources are regarded as consisting of land, labour and human enterprise as well as money. And as money is likely to be in short supply the maximum use must be made of the other resources. ...

Says Dr. Eaton: "To make the most of available resources the existing housing stock – even sometimes houses in shanty towns – must be regarded as an asset to be conserved and improved, not to be destroyed".

Housing in the poorer areas can be given a new value by provision of water supply, sanitation, roads and lighting, refuse disposal services, and educational and recreational facilities. Upgrading strengthens existing community links, taps individual initiative and gives some breathing space in terms of capital finance.

This approach is being tried out on a big scale in Jakarta and Surabaya in Indonesia where the objective is to retain all housing, even the poorest, by providing infrastructure services up to urban standards for existing settlements, with the promise of even greater future improvements. A similar plan is pending for Seoul, Korea. ...

Site-and-service projects cover those where a housing site is provided, together with water supply and drainage, on which a resident builds his own house either from scratch or round an initial core or shelter. Studies in Jamaica and Tunis showed that given a free site, even very low-income groups are ready to invest money, time and family labour in building or extending homes.

more than perhaps a car or a television set. Even so, it is never likely to become an absolute need, since other goods such as food, drink and clothing are also given top priority, and housing could not be wanted to the exclusion of these. Generally, it must be remembered that consumers will 'want' everything, to some extent, and 'need' virtually nothing.

The second question we must ask about what it means to want something is 'Does that want take effect in any way?' A woman shopping for clothes may say she likes everything she sees, but would she be prepared to buy it? It is only when a want is expressed in an intention to buy that it can take effect in a market economy.

In the case of world housing such offers may not always be made, for in the situations of extreme poverty where housing standards are at their lowest, consumers do not have money with which to express their wishes.

QUESTIONS

(i) A family intends to build their own house on a site where foundations, floor and services are already provided. Suggest a list of products they will need to complete their task.

(ii) Give an example of a building that can be considered either (a) a capital good, or (b) a consumption good.

(iii) A man has been shipwrecked on an isolated tropical island, and has to decide immediately how to use his time. What would you expect to be his four main wants, in an order of priority?

(iv) In a country there are a few very rich people, and everyone else is very poor. A given amount of resources for housebuilding is available on a free market. Describe the likely pattern of housebuilding, and the way wants are likely to be satisfied.

(v) Suggest two reasons why the government of a Third World country might choose to control the use of resources in housebuilding, rather than to leave it to the free market.

2.2 Opportunity cost

Economics is the study of decisions made in response to the fundamental economic problem of scarcity. Because resources are scarce relative to wants, choices have to be made, and in each case it will be a choice between alternatives. Whichever choice is finally agreed, it will always involve giving up other possibilities. A consumer chooses whether to buy one good or another, and a producer chooses to produce one good or another, by one method or another.

It will always be true, therefore, that the cost of any economic decision is measured in terms of the *best* alternative that is given up. This is called 'opportunity cost'. Since a wide variety of decisions are made in economics the idea is an important and far-ranging one, and worth exploring in some depth.

Cost and benefit

Cost exists when other opportunities are lost, and is measured by the value of the best of these alternatives. This means that costs and benefits are always closely linked, since cost is the same thing as alternative benefits lost. If one man gives £10 to another, his generosity has cost him the opportunity of buying £10 worth of goods for himself, but it has benefited the other man by exactly the same amount.

Nothing is truly free in economics, therefore, unless it involves no loss of alternative benefits at all. A gambler who is left with 'no alternative but to end it all' has decided, in effect, that he has no benefits from being alive, but a goodly number of costs!

Knowledge

Economic choices are made after a consideration of true alternatives. A lack of knowledge may prevent such consideration, and limit the successful working of the economic system. It is for this reason that consumers try to find out about the houses, cars or television sets they are interested in buying, and that producers conduct market research before launching new products.

Despite these precautions, choices can still be made in ignorance or in disregard of the full nature of alternatives. A thoughtless picnicker throws away a cigarette without thinking that the forest could easily burn itself, and him, down. He throws a bottle away, knowing that broken glass will be dangerous to others later, but not to himself if he does not pass that way again. If individuals face different sets of alternatives, opportunity cost will be different for each, and choices are likely to differ. This can lead to disagreement between individuals or between minority and majority groups and result in economic choices becoming matters of social or political dispute.

The risks of taking medicines

To illustrate these issues, let us turn to an area outside that normally considered in economics, one in which similar decisions need to be made. We are told in the extract that: 'Drugs are useful poisons. To get benefits you must take risks and the risks must be set against the risks of not taking medicines'. This is a comparison of alternatives just like those found in economics. The issue of whether to vaccinate children against whooping cough is, in effect, an exercise in opportunity costs.

The opportunity cost of vaccination is measured in the benefits that are lost as a result. Society as a whole must pay a cost for the resources that are used to produce vaccine, and to provide the service of administering it, which could be used in an alternative way. Private families suffer a cost if their child is one of the ten who, each year, are tragically disabled as a result of vaccination.

The opportunity cost of failing to vaccinate is also measured in terms of benefits lost. Society, and individual families, will both suffer from the continued presence of epidemics of whooping cough, and the passing and permanent demands on health care resources that these would cause.

Since there is a cost attaching to a decision either way, it is clearly important that parents make their choice after comparing true alternatives. In this example it seems probable that such a choice has not always been possible. For some time, for instance, the risks of vaccination were not fully appreciated. More recently, the publicity given to the issue has perhaps made parents over-react, and exaggerate the possible cost of vaccination. In each case, decisions could not have been based on fully accurate information.

More fundamentally, there is probably a difference of view between private families and society as a whole. While the disease is well controlled, the risk to the individual child from vaccination may well appear to be more severe than that from catching whooping cough. Society as a whole, however, must anticipate the situation that would exist if all individuals reasoned equally and decided not to vaccinate. On this collective basis, the risks from an epidemic would become very serious indeed, and, by comparison, 'the injury of ten children in a year is a "small sacrifice".'

The alternatives to be considered by parents and by society are rather different, and may suggest a different decision to each.

Risks of taking medicines will never be eliminated

Elizabeth White writes of the painful dilemma of having to decide whether or not to vaccinate her baby against whooping cough (Opinion, September 10). She expresses the issues perfectly. Her doctor has given his opinion – to vaccinate – but has made it clear that the decision, and so the responsibility for it, rests with the parents. Doctors have been criticised, with some justice, for telling patients what is best instead of giving them the opportunity to choose for themselves. Many medical decisions have to be taken in the absence of as much knowledge as we would like, and this must often cause distress to those personally involved when they come face to face with alternatives both of which carry risk....

- There are risks in taking medicines stemming from their inherent nature and that of the human body; these can be minimised by skill and knowledge, but they cannot be eliminated.
- There are risks in not taking medicines when they are needed.
- We commonly lack adequate information, and this is the source of the confusion on recommendations that Mrs White detects in this and other countries....

Of course we are better off if we can measure the risks exactly, though reliable evidence of rare events is difficult and expensive to get. But research can be commissioned in this and many other areas. However, it will still only allow a generalisation, though it will define predisposing factors, whereas Mrs White seeks a precise statement about her own now healthy child. As she says, for the community the injury of ten children in a year is "a small sacrifice" if it eliminates whooping cough, but it is not "a small sacrifice" if your own child happens to be one of the ten.

Unfortunately she must make do with the position that the risk of damage due to the vaccine is very small (perhaps much less than *one in 80,000*), that the risk of Lucy contracting whooping cough is also small, and that if she does have it the risk of permanent damage is very small indeed.

If Lucy is vaccinated and harm follows, her parents will no doubt blame themselves and perhaps also the medical profession. If Lucy is not vaccinated and gets whooping cough her parents will no doubt blame themselves and perhaps also the medical profession.

This is a dilemma of medicine and also of life in general. Many of our daily activities carry remote risks of disaster. If we try to make comparative evaluations we will immobilise ourselves in anxiety and indecision, so we put the problems aside and stop thinking about them though we know they are still there. But, from time to time, such issues are forced on us painfully....

Drugs are useful poisons. To get benefits you must take risks, and the risks must be set against the risks of not taking medicines.

These are hard words, but they need saying, for our society has unreasonable expectations of medicines, though it knows and accepts that surgery carries risks, that transport carries risks and that electricity and gas in the home carry risks and it readily uses all these conveniences.

QUESTIONS

(i) Describe the benefits lost by parents as a result of a decision (a) to vaccinate; (b) not to vaccinate their child against whooping cough. State carefully any assumptions you need to make.

(ii) Assume, for the purposes of this question, that the following hypothetical figures apply:

the cost of making and administering whooping cough vaccine is £1 per child;

the number of children eligible for vaccination each year is 800 000;

the cost, in treatment and after-effects, of catching whooping cough is £50 per child, on average, and one in five children catch the disease unvaccinated;

the cost, in terms of legal awards and welfare payments, of the vaccine-damaged child is £250 000, on average.

Calculate the annual opportunity cost to society of a decision (a) to vaccinate; (b) not to vaccinate all babies.

2.3 The role of prices

The fundamental economic problem gives rise to a need for choices about how resources are to be used, and which consumer wants are to be satisfied by the use of those resources. These choices can be made centrally and collectively in a planned economic system, or as a result of the free decisions of individual consumers and producers. It is the second type of system that is considered in the analysis of markets.

The problem of scarcity provides a general basis for the whole study of economics, but it is usually more convenient to approach the problem in terms of its effects upon each type of factor, good or service. We will therefore take each part of the system, one by one, knowing that the general principles that explain the behaviour of any one area will apply equally to all others. The example of world housing offered in Section 2.1, for instance, was typical of the way in which scarcity affects all products.

The exchange of each type of product or factor is explained in terms of its own *market*, where buyers and sellers are brought together. Individuals who control economic resources have the ability to produce whatever it is that the market deals in, and are on the *supply* side of the market. Individuals who want whatever it is that the market deals in, for their own satisfaction, are on the *demand* side of the market. The market exists in order to allow an exchange between those that have, but are willing to sell, and those that want, and are willing to buy.

In a free market system, the role of balancing these two market forces, and of deciding which wants are to be satisfied by scarce resources, is taken on by the price mechanism. The way in which price fulfils this role is studied in the chapters that follow, and for the present it is sufficient to consider only certain aspects of its work.

Equal prices

Prices take on the role of matching supply to demand in a free market economy. If consumers' wants become greater for one good than for another, prices will tend to change in order to reflect this. If more scarce resources are required to produce one good rather than another, then prices will tend to be greater for the good that is relatively scarce.

In this way, prices become part of the fabric of the market system – so much so, indeed, that it is difficult to imagine a world without them. Even in a centrally-planned economy we see that prices are usually retained in some form or other. Let us suppose, therefore, that all price differences were to be abolished by Act of Parliament. What would be the outcome?

Without prices, and with no system of controlled distribution to replace them, there would be chaos. Prices reflect differences in consumers' tastes for different products, such as Rolls-Royces rather than dining-room chairs, and oranges rather than lemons. Prices reflect differences in the amounts of scarce resources used to produce different goods and services, such as Coronation thrones instead of kitchen chairs, and electricity instead of natural gas. On both counts prices will tend to reflect the quality of products, and the relative scarcity of factors and products being exchanged.

QUESTIONS

(i) Explain, in terms of wants and resources, why the price of a Coronation throne should be higher than that of a standard kitchen chair.
(ii) Explain why electricity should claim more scarce resources than natural gas, when supplying to householders.

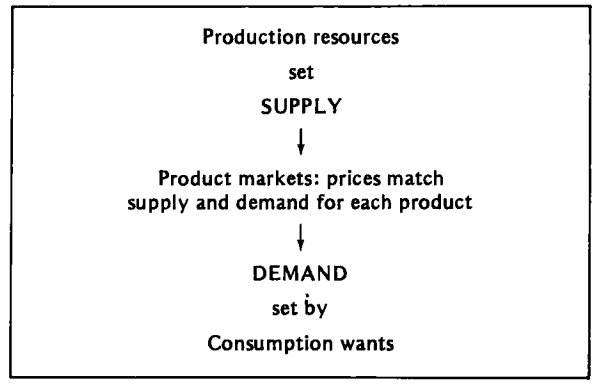

Diagram 1 The work of product markets

Equal prices

I am greatly taken by last week's proposal from the nationalised coal and electricity industries, that their colleague, the equally state-owned Gas Corporation, should have its unacceptably competitive prices raised, by some sort of tax, until they are just as expensive as the watts and tons of nutty slack that the aggrieved parties themselves supply.

The gas men have to take this sort of thing seriously.... But it does occur to me that if a notion so fruitful is to be discussed at all, we should spare no effort to take it to its logical conclusion. I propose, therefore, that the next time one of my ingenious parliamentary readers comes top of the House of Commons ballot, he should introduce a private member's Bill designed to ensure that Everything Costs the Same as Everything Else.

This is obviously the only fair way to attack the pernicious problem of competition at its root. How can it possibly have been allowed, all these years, that oranges should trade at a different price to lemons, or that a pound of lead might be purchased for more, or less, than any given pound of feathers? The thing is clearly ridiculous, and in a sensible world like ours, where decimalisation clears up all misconceptions about money, and metrication similarly solves all problems of measurement, it must cease forthwith.

Of course, one or two small conceptual difficulties may arise when it actually comes down to drafting the legislation. To start with, there is this knotty question of units. While it is clear to any idiot that one therm of heat, as sold by your local gas showroom, should in all equity be priced the same as the therms on offer from the electricity board or the anthracite merchant, there are one or two slightly more complex situations. Would you, for instance, feel that one Rolls-Royce is the proper equivalent of one dining-room chair, or should it perhaps, in this case, be one set of dining room chairs – or even one houseful of tasteful reproduction furniture. Even if you are going to square this sort of thing up with appropriate tax adjustments, you do have to make up your mind, and work out some pretty clear rules.

The matter does not end there, either. Are all chairs, from now on to be regarded as identical, within the meaning of the Act, so that one wooden-backed Windsor for the kitchen must be statutorily priced the same as the Coronation Throne? Or are we to have a judiciously worded Schedule, attached to the legislation, accepting that in certain circumstances some chairs are to be regarded as more equal than others? Maybe another referendum would be an appropriate way of resolving the issue.

Quality, as you will have unerringly noticed, is one of the more intractable difficulties to be faced. Another is fitness for purpose. Even if you can find sufficient in common between any two objects (apart from their price) to establish any meaningful comparison, it is rare indeed that the common attributes cover more than a fraction of the whole. Bread is bread, but any two standard loaves can be white or brown, sliced or unsliced, fresh or stale, soft or crusty, well or lightly baked, and no doubt a dozen other things beside. Under the Equal Price Law they will all naturally be regarded as one and the same – with the inevitable result that the ones which cost a little more in time, skill or ingredients will shortly disappear from the market. But that, it must be presumed, is what we are all supposed to prefer.

It would be interesting, though, to hear the Central Electricity Generating Board or the National Coal Board extending their gas attack to a few more commodities....

If that's too difficult, perhaps they could get back instead to those therms they are selling at such patently discrepant prices. For it might occur to a simple-minded outsider to ask whether it was really just therms that they are dealing in. Coal therms are not just little packets of disembodied heat and energy – they are also dollops of dirt and smoke and inconvenience, and carry with them large additional costs for extraction, transport, storage and thermal inefficiency. Electrical therms, to the extent that they are made from coal, include a proportion of all these advantages and disadvantages but throw in a selection of their own varied virtues and drawbacks. Gas therms, different again, cost little to produce, while they last and have already funded their own vastly-expensive distribution network. Some things that electricity does they cannot do at all; others they normally do far more efficiently, as well as, for the moment, economically.

It is true, to a large extent, that all these prices are "managed" and therefore rather artificial. It may also be true that gas would be more valuable as a chemical feedstock than fuelling my central heating system. But that was not the assumption on which we spent some £2 billion bringing North Sea gas to the average household consumer. Now this has been done, I see little logic in penalising the gas user just because electricity, in its price-subsidy years, sold people a lot of pretty appliances they can no longer afford to use. I move that the Equal Price Act be rescinded forthwith.

2.4 Scarcity value

Scarcity can only be assessed by comparing the availability of something with the desire for it, in relation to other things at the same time. It is the function of the price mechanism to reflect this relative scarcity in the market place – a function that it fulfils with varying degrees of success.

Bricks

The price of a particular type of brick in England is 5p per unit. We will assume that this is the price that is needed to attract resources in the production of bricks sufficiently to meet the level of want of those wishing to buy bricks. In other words, 5p measures the relative scarcity value of bricks.

Many more economic resources are needed in order to transport bricks from England to Saudi Arabia, and it appears that the prospective customer there wants them very much. The scarcity value of the same bricks in Saudi Arabia is therefore much greater than in England and is reflected in the rise in price from 5p to £2 each.

In this, admittedly unusual, example it might even be the case that the consumer wants the bricks so badly *because* of their relative scarcity in his home country, and the prestige his new house will bring him if built in this way.

Dropping a brick

JEDDAH: The rich Saudi Arabian sheikh decided he had to have the bricks he saw in England for his new house. Unfortunately, the new house is in Saudi Arabia and that meant that he had to pay £27,000 to have the bricks transported by air from England.

The 12,000 bricks ended up costing the sheikh over £2 each instead of the price on the English market of 5p.

QUESTIONS

(i) Assume that both English and Saudi Arabian bricks sell for 5p in their home markets, and that the Sheikh paid a total of £27 000 for his 12 000 imported bricks. What was his opportunity cost per brick of choosing English rather than Saudi Arabian bricks?

(ii) Assume that the Sheikh derives higher satisfaction, the greater the scarcity value of his bricks. What will happen to his relative want for these bricks as their price increases, and how might this affect their price?

The body in your bath

In this example, also, there has been an increase in scarcity value, which has resulted in a reflected increase in price. The role of the price system is to match resource use to consumer wants, and accordingly the high demand for natural sponges has encouraged fishermen to devote even more economic resources to finding the good.

It would seem, however, that with a slow-growing, natural resource such as sponges (and we might extend the product range to include trees, and fish and oil in the same argument) the price system cannot work with complete accuracy. If a natural resource is sold more quickly than it can regenerate itself, it will eventually disappear, and there is a risk that a rise in price will serve only to accelerate this process.

The body in your bath

The corpse in your bathroom is causing concern. Not to the police. After all, there is nothing illegal in keeping a sponge in your bath. But to conservationists. They are worried that natural sponges are being squeezed into extinction.

In the traditional sponge-fishing areas of the Mediterranean and West Indies, they are becoming increasingly rare and have all but disappeared from shallower waters. As always, the problem is over-fishing.

Protective legislation is almost nil, and even where it exists it is seldom enforced. The demand for sponges has never been higher, and greatly exceeds supply. So over-fishing continues. Scarcity-value puts up the price, and an inflated price encourages the fishermen to scour the depleted seabed even harder.

Although, in Harrods, a top quality bath sponge now fetches up to £65, Britain does not rate highly as a nation of spongers. Last year we imported only three tons of sponges, compared with the 108 tons taken by France.

The usefulness of sponges has been known for at least two thousand years. Ancient Greeks used to pacify their babes with sponges soaked in honey. But commercial sponge fishing did not start in earnest until the beginning of the nineteenth century. Today the best ones come from the Mediterranean coastal waters from Tunis eastwards; not only the familiar honeycomb sponge (the one usually sold for the bathroom), but also the rarer, costlier fine cup sponge.

It is hard to feel sympathy for an animal as unresponsive as a sponge. But at last it has found a champion in the distinguished form of the Fauna Preservation Society. "Sponges may be simple, but they are an essential part of the marine ecosystem," says the FPS. "What we would like to see is the development of sponge-farming, coupled with stricter controls on the collection of wild sponges."

In the case of natural sponges, the development of sponge-farming would overcome this risk, and allow the increased resources to expand production to meet consumer wants. Furthermore, measures of centralised control would restrict the undesirable aspects of free market behaviour, and protect sponges from disaster.

QUESTIONS

(i) Describe under the headings of Land, Labour and Capital the resources you would expect to need if you wish to offer natural sponges for sale to tourists on a beach situated next to a sponge-fishing area.
(ii) What lack, or disregard of knowledge, and on whose part, might lead to the extermination of natural sponges?

Relative and general price levels

It is the role of the price mechanism to reflect the relative scarcity of the items being traded in different markets. In order to be able to assess the scarcity of any one good, therefore, its price must always be compared with the prices of all other goods, in order to find its *relative* price level. Unfortunately, this is a comparison that can be confused if the prices of all other goods are themselves changing. This difficulty will exist when all prices rise together, through inflation, or fall together, through deflation, since this will cause a change in the *general* price level.

Cheap spuds

A change in the price of one good relative to all others will signal an increase in its relative scarcity value, as is predicted in this example for potatoes. However, if the rise in oil prices causes the prices of all products to rise together, there will be inflation in the general price level, and no change in relative scarcity values. The suggestion here is that the rise in the price of the plastic plant pots is a part of a general, rather than a relative, price rise.

Our concern in this Casebook is with the way in which the market system approaches the problem of scarcity, and we must therefore take care to consider only the relative prices of goods in the markets we study. Changes in the general price level will be considered elsewhere.

Buy now while the cheap spuds last

The most sensible advice we received last week came from David Vinter, an agricultural economist living in Lincolnshire, which as he says himself, is an intensive arable farming area. Vinter confidently predicts that potato prices will stay steady for the next two months and may possibly fall. They will then rise later in the year.

Potato crops are light and the acreage planted is well down this year. "Potatoes have a comparatively low elasticity of supply and demand [that sentence proves he is an economist] with respect to price and there are no cheap substitutes." The main acreage of potatoes will be lifted during the next two months, so now is the time to buy in 4 stone sacks from the farm gate.

Unfortunately for David Vinter, however, we do not think this is actually an inflation tip. What is going to push prices of potatoes up is scarcity – not money inflation. We are sending him a £1 consolation prize, but the full £5.61 inflation tip prize goes to Beatrice Brown of Tonbridge. She suggests keen gardeners buy plastic plant pots which will increase in cost in the near future following the 11% rise in OPEC oil prices. That is inflation.

QUESTIONS

(i) What assumptions must be made before a rise in oil prices can be expected to lead to the same price rise for all products?
(ii) Explain how consumers' wants are likely to change, following the advice on buying potatoes given in a national newspaper, and how this is likely to affect the relative price of potatoes.

3 The theoretical framework

3.1 Functions

A market exists when those who are willing to sell something are put into contact with others who wish to buy. The market will allow exchange between those who own scarce economic resources and those who wish to satisfy their consumption wants. The conditions that control that exchange are studied as two distinct market forces: supply and demand.

Supply is the amount of a particular good that individuals are willing to offer for sale in a market at a particular time. Demand is the quantity that individuals intend buying in the market at the same time. Supply and demand are quite different economic forces, divided by the most fundamental economic problem; for supply is provided by those who control scarce resources, and demand arises from those with unlimited wants. This distinction will be maintained throughout the model of market behaviour which follows.

The model begins by explaining how supply and demand in a market, at a particular time, will be set. Clearly, each market will have special priorities and characteristics of its own, but there are still two important generalisations to be made. The first is that demand and supply will each be decided by different people, usually basing their decisions upon different factors. Secondly it will be seen that both demand and supply decisions will usually be influenced by a great many factors at the same time.

The supply *function* is a list of all the influences upon the decisions of suppliers about how much to sell in a market at a particular time. A typical supply function shows that the quantity offered for sale depends upon:

(i) the price of the good being supplied (p);
(ii) the prices of any other goods that are related to it in terms of supply, such as by-products (p_c), or alternative products (p_s);
(iii) the cost of each factor of production employed in producing the good (C);
(iv) the state of technology in production (S);
(v) and any other influences upon suppliers' 'tastes' for producing the good (T).

The demand function can be constructed in a similar way, to show the influences upon buyers' decisions. It will consist of:

(i) the price of the good which consumers intend to buy (p);
(ii) the prices of other goods related to it in terms of demand, as either complementary goods that are bought to go with it (p_c), or substitute goods that are bought instead (p_s);
(iii) the income of the prospective buyers (I);
(iv) and any other influences upon consumers' 'tastes' for the good they intend buying (T).

The demand for sugar

Sweeteners are produced from various sources, and are exchanged in different markets, of which some are controlled and some are free. The market that we will study here is that for raw sugar, produced from cane and beet, and exchanged freely between trading nations throughout the world. Demand and supply in this market are each determined separately, and are influenced by different things.

Demand is defined as the amount that buyers intend buying in the market at any particular time. As an expression of buyers' wishes, it is entirely a hypothetical idea, and can be explained without reference to details such as whether anything is being offered for sale, or how suppliers might feel about market conditions. Ignoring supply considerations altogether, we must put ourselves into the buyers' frame of mind and construct a function to include all the important influences upon his demand decision. This approach will allow us to explain demand levels in the past, or even to predict the likely pattern of demand in the future.

The typical demand function leads us to expect that the demand for world sugar will be affected by its price, by the market situations for its complements and substitutes in demand, by world income, and by consumers' tastes for sugar. The extract shows that each of these influences has indeed been important in explaining the demand for world sugar in the past.

Price: The 'phenomenal price rises of 1974' resulted in a slowing of the rate of growth of demand for sugar.

Complements: An unexpected and interesting use of sugar has developed in Brazil where sugar is used to produce alcohol as an additive to petroleum. This technology has had the result of making sugar and transport, to some extent, complementary; and the increased demand for transport, and other uses of fuel, will also bring an increased demand for sugar.

The demand for sugar

Sugar consumption has exhibited fairly steady growth over the years, showing an average increase of just over 2m tonnes per year since 1953-54. However, during the present decade this rate has slowed somewhat, partly the result of the phenomenal price rises of 1974. The major element of demand comes from developed nations, as higher sugar consumption goes hand in hand with improved standards of living, but the scope for further increased demand in Europe, the US and Japan now appears limited. Market experts consider that the saturation level for consumption of sweeteners is in the range 45-55 kilos of sugar equivalent per head per year. Consumption levels in both the EEC and the US were inside this range in 1974 and, despite the fall-off in demand in 1975-76, these levels are likely to have been regained. Another restraining factor in both these areas is that sugar is now constantly under fire from the medical profession.

An obvious threat to the consumption of sugar cane and beet comes from other sources of sucrose. These are maple, honey and some species of palm and other sweeteners such as corn syrup and synthetics. However, the relative importance of these is small currently, although there is major growth potential for the usage of the maize-based high fructose syrup, an isoglucose. The record sugar prices of a few years ago gave rise to increased commercial viability of the cheaper isoglucose, which has now gained a foothold in the sweetener market. The major impact of isoglucose has been in the US, where it can compete freely with sugar. . . .

Clearly the best hope for increased demand for sugar is in the developing countries, where sugar consumption per head is considerably lower than in developed nations. However, some Middle East and North African countries have decided to push for self-sufficiency despite the currently low world sugar price. China is possibly the main area for optimism; the per capita demand is only five kilos a year, well below the all-Asia average of nine kilos. Nigeria is another potential growth area, having a yearly per capita intake of only four kilos. For the next few years at least, however, the pace of consumption growth will continue to be dictated by the developed world and will thus necessarily be slow.

An interesting development, with considerable potential in the future is the use of sugar in non-foodstuffs. Sucrochemistry is opening up many new avenues for the use of sugar, including the manufacture of detergents and petrol made from fermented sugar. Brazil is already using its surplus sugar to produce alcohol as an additive to petroleum, although for most countries it is cheaper to make industrial alcohol from ethylene. Experts believe, however, that within 15-20 years the process of producing alcohol fermented from sugar cane will become viable. . . .

Substitutes: Since our definition of the market was drawn to include sugar produced from beet and cane, any other source of sweeteners will intrude as a substitute good. In this example we are told that the increased use of corn syrup, and other sweeteners, because of their relatively lower price, has cut demand in the sugar market.

Income: Perhaps the most important influence upon demand in the world sugar market has been the level of consumer income. By and large, 'higher sugar consumption goes hand in hand with improved standards of living', so that countries with greater income consume more sugar, and countries such as Nigeria and China consume only one tenth as much, per head, as areas such as the USA and the EEC. It does appear, however, that this influence is important only up to a certain 'saturation level' when further increases in income may no longer affect demand.

Tastes: Consumers' tastes for a product can be affected by all sorts of things, and matters of habit, whim and fashion are rarely predictable. In this case, however, there does seem to be one clear influence upon consumers' tastes for sugar, at least in the highly developed economies of the world. The criticisms of sugar, offered by the medical profession, and the more general concern with diet that has come into fashion, have resulted in a reduced taste, and lower demand, for the product.

QUESTIONS

(i) Which countries would you expect to be (a) major sellers, and (b) major buyers of sugar in the world market?

(ii) State two examples of a change in relative prices influencing demand for a product, that are described in the extract.

(iii) Suggest a product which you would expect to be a substitute for sugar in (a) demand, (b) supply.

(iv) How do consumers' tastes for sugar differ between the rich and the poor countries of the world?

3.2 Market intentions

It is the purpose of economic theory to explain what *would* happen under all possible circumstances. The situations considered, therefore, are almost always imaginary ones. Only in this way is it possible to take everything into account. The understanding this leads to can then be applied to the real world, to explain and even predict the actual behaviour that is seen there.

A theoretical view of market intentions is based on two ideas, both of which are important throughout the study of economics. We will consider them here in general terms, although they will be applied more directly in the work that follows.

Other things being equal

Demand and supply are each set by many different influences, which are listed in the typical demand and supply functions. In order to see how any one of those influences affects demand or supply, we must separate its effect from those of the others. This is achieved by asking how it *would* affect demand or supply, *all other things being equal.* By taking each influence one at a time, in this way, we construct a complete picture of the way market intentions are formed.

Planned levels

Market intentions will be affected by changes in each influence in the demand and supply functions. A change in price, for instance, would affect the intentions of both buyers and sellers. To see how, as fully as possible, we ask what the planned levels of demand and supply would be, *at each and every price level.* This is clearly an imaginary state of affairs, for only one price level can exist at any one time. Nevertheless, it gives the complete picture of market intentions that we are seeking.

Gold

The special market situation of an auction by the United States Treasury of some of its official gold reserves allows us a rare and privileged view into the intentions of gold-buyers. For convenience and clarity, it is assumed that bids by buyers at the auction had to be submitted in advance and in total secrecy. Thus each buyer would bid independently, on the basis of his own conditions of demand. Those with greater funds available, with fewer alternative areas of investment, or with a greater speculative taste for gold, would be willing to offer the highest prices. It seems reasonable to expect that these other influences, although different for each buyer, would stay unchanged throughout the period of bidding, so that 'all other things remain equal'.

When buyers submit their bids, they do so without knowing whether they will be successful in gaining some of the gold or not. They are therefore expressing only their intentions to buy, and it is clear from this example, where buyers asked for 1 364 400 ounces but only received 300 000, that some buyers were disappointed in their plans.

We do not know the details of individual bids, but the overall picture is clear. At the top of the range there was one bid at a price of $182.35, and at the other extreme the 212th bid was at a price of only $12. Clearly some buyers were more optimistic in their plans than others! Within this range we know that the bids down to a price of $180.01 (which were all successful) were for a total quantity demanded of 300 000 ounces. We also know that the 212 bids were offered by only 44 bidders, and this implies that many made more than one offer to buy. Probably buyers constructed their own 'demand curves' and hoped to buy more gold, by succeeding with more bids, the lower the price fell.

A market demand curve

If we assemble this information we can estimate the overall pattern of buyers' intentions at the auction. Assuming that the relationship between price and demand is a continuous one, we can estimate a demand curve such as that shown in diagram 1.

In this example, we are able to read the minds of buyers, to see their intentions in the market. Such a privilege is not often possible in real world markets. In most cases the market will record for posterity only one out of the many possible combinations of price and quantity demanded – the actual amount that is finally exchanged. In this example, that 'actual' level is also registered – since 300 000 ounces of gold were sold for an average price of $180.38 – but thankfully so is a lot more besides.