LECTURE NOTES ON

PRINCIPLES OF MACROECONOMICS

VOLUME ONE

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CHAPTER ONE

THE ROLE OF GOVERNMENT

The pricing system answers three basic questions of resource allocation:

- what goods will be produced?
- how will they be produced? and
- for whom will they be produced?

The forces of supply and demand acting through the pricing system (that is, the market) affect the bulk of decisions that answer these three questions. But we do not live in a free-market world. In addition to market forces, there are many other forces at work that affect the allocation of resources. One of the most important of these non-market forces is government. In this chapter we justify a role for government intervention and the part played to affect the resource allocation within the economy.

A. THE ROLE OF GOVERNMENT IN THE ECONOMY

All governments, regardless of political colour, provide economic functions. A significant number of these functions have arisen in order to overcome the inadequacies of the market system. Market failure is commonly identified by economists in many instances. Indeed any situation in which the unrestrained market system causes too few or too many resources to be allocated to a specific economic activity could be stated as an example. Consequently, it would be rather arduous to list all the specific instances of market failure that exist - but in this chapter we will deal with four of the major areas in which the market is recognized to fail. These are:

1. Market economies tend to experience severe business fluctuations.
2. The market system cannot deal effectively with the spill-over (third-party) effects of many economic activities and therefore alternative systems of allocation need to be considered. Externalities
3. Market forces cannot provide public goods and make a poor job of providing certain other goods of merit.
4. Market forces lead to an unequal distribution of income and wealth.

As already suggested the government intervenes in various ways to correct these failings. We will deal with each of these in turn before briefly considering the related problem of government failure.

1. Governments strive to achieve Economic Stability

All governments attempt to stabilize their economies by smoothing out the ups and downs in overall business activity. They aim to:

- maintain full employment,
- keep prices steady,
- sustain economic growth,
- achieve an equilibrium on the balance of payments,
- prevent environmental damage, and
- redistribute income and welfare.

Well-intended governments take on the task of attempting to meet all these important objectives in order to stabilize the economy. The order of priority in which these economic objectives are attacked, however, depends on the government in office but all governments ultimately desire these same objectives in their quest for economic stability. The market, left on its own will not be able control the severe ups and downs needed to ensure stability in the economy, thus justifying the need for government's intervention.

Key Points 1.1

- The economic functions of government are largely designed to overcome recognized problems of market failure.
- Economic stability is a responsibility accepted by all modern governments.
- To achieve economic stability various objectives are pursued: full employment, stable prices, equilibrium on the balance of payments, a clean environment, steady growth, and a redistribution of income and welfare.
- The various economic objectives identified change in their order of priority according to the government in office.

2. Governments try to correct Externalities

We now come to the second item on our list of market failures which represents a major imperfection of the price system. In the pure market system, competition would only generate economic efficiency when individuals are faced with the true opportunity cost of their actions. In some circumstances, the price that someone actually pays for a resource, good, or service, is higher or lower than the opportunity cost that society as a whole pays for that same resource, good, or service.

Consider a hypothetical world where there is no government regulation against pollution. You are living in a town that so far has clean air. A multinational British based Steel Mill Company identifies a raw material source in Ghana and moves into your town to operate in a subsidiary company. This company located in your town produces steel mainly for exports

for which it has paid for the inputs - land, labour, capital, and entrepreneurship. The price it charges for the steel reflects, in this example, only the costs that the steel mill incurred. In the course of production, however, the mill gives off smoke - free by simply dispersing it. This is indeed taking a liberty. The steel mill does not have to pay the cost of cleaning up the smoke; rather, it is the people in the community who pay that cost in the form of dirtier clothes, dirtier cars and houses, and perhaps even more respiratory illnesses. The effect is similar to what would happen if the steel mill could take coal or oil free. There has been a spill-over effect, or an **externality**. Actually, there has been an *external cost*. Some of the costs associated with the production of the steel have *spilled over* to **third parties**, that is, parties other than the buyer and the seller of the steel. A negative spill-over is called a *negative externality* because there are costs that you and your neighbours pay - dirtier clothes and cars plus respiratory problems - even though your group is external to the market transaction between the steel mill and the buyers of steel.

Not all externalities are negative. Using a classic example, even people who *do not* receive inoculations against polio, smallpox, whooping cough, and diphtheria benefit from everyone else being inoculated, for epidemics will not break out. Thus there are benefits that are external to each individual's decision to be inoculated. We call the existence of such benefits a *positive* externality.

Attempting to Measure External Costs

Look at panel (a) in Figure 1.1. Here we show the demand curve for steel to be DD. The supply curve, as observed by the steel mill in your town is SS. That supply curve includes only those costs that the firm has to pay. The equilibrium, or market-clearing, situation will occur at a quantity of Qe. Let us take into account the fact that there are external costs. These are the spill-over costs that you and your neighbours pay in the form of dirtier clothes, cars, houses, and increased respiratory disease due to the air pollution emitted from the steel mill. Let us include these costs in our graph. We do this to find out what the full cost of steel production really is. This is equivalent to saying that the price of some other input into steel production has increased. Remember that an increase in input prices would shift the supply curve inwards to the left. Thus, in panel (a) of Figure 1.1 the supply curve shifts from SS to S'S'. If the spill-over costs were somehow taken into account, the equilibrium quantity would fall to Qe' and the price would rise to Pe'. That price is implicitly being paid in full, but by two different groups of people. The lower price Pe is being explicitly paid for by the purchasers of steel and steel products. The difference between Pe' and Pe represents the cost that third parties are bearing in the form of dirtier clothes, houses, cars, and increased respiratory illnesses.

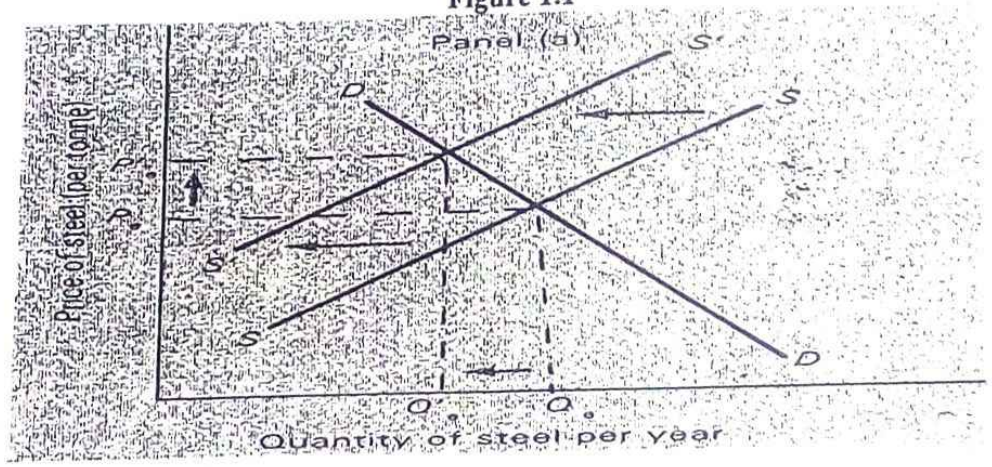
An externality is the total costs incurred or total benefits enjoyed by a third party or a party external to a given transaction.

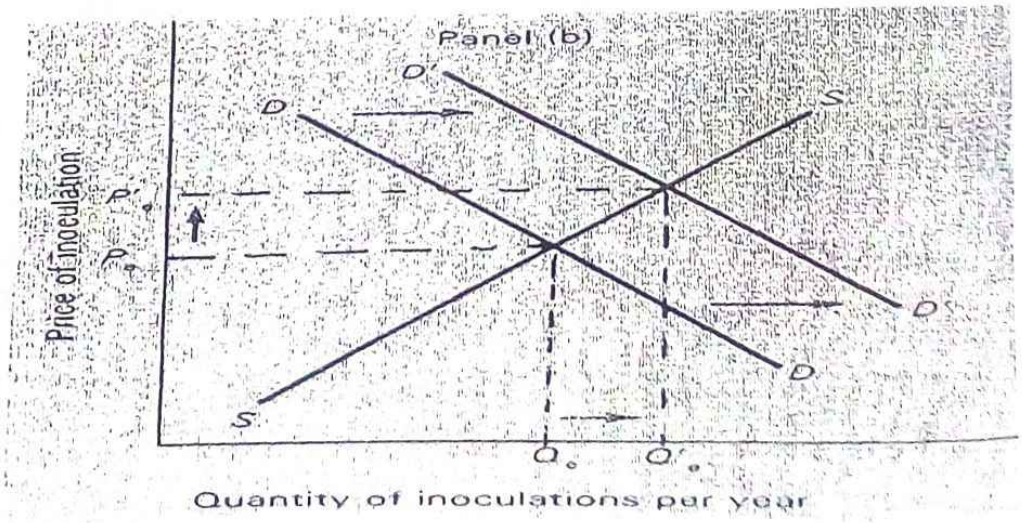
Figure 1.1

External Costs and Benefits: *In panel (a) we show a situation in which the production of steel generates external costs. If the steel mill ignores pollution, at equilibrium the quantity will be Qe, where the demand curve, DD, intersects the supply curve SS. If we include the additional cost borne by nearby residents that is caused by the steel mill's production, the supply curve would shift inward to the left to S'S'. This shows that the society is devoting too many resources to steel production if external costs are not taken into account, for if consumers were forced to pay a price that reflected the environmental cost of the spill-over costs the quantity demanded would fall to Qe'.*

In panel (b) we show the situation in which inoculations against diseases generate external benefits to those individuals who may not be inoculated but who will benefit because epidemics will not break out. If each individual ignores the external benefit of inoculations the market-clearing quantity will be Qe, where DD intersects SS. If external benefits are taken into account, however, the demand curve would shift rightward to D'D'. The new equilibrium quantity would be Qe' and the price would be higher, Pe'. With no corrective action, however, this society is not devoting enough resources to inoculations against contagious diseases.

Figure 1.1





Attempting to Measure External Benefits

To demonstrate external benefits in graph form, we will use the example already mentioned concerning inoculations against various diseases. In panel (b) of Figure 1.1 we show the demand curve, without taking account of any external benefits as DD and the supply curve as SS. The equilibrium price is Pe and the equilibrium quantity is Qe. We assume, however, that inoculations against contagious diseases generate external benefits to those individuals who may not be inoculated but who benefit because epidemics will not break out. If such external benefits are taken into account, the demand curve would shift out from DD to D'D'. The new equilibrium quantity would be Qe' and the new equilibrium price would be Pe'. With no corrective action, this society is not devoting enough resources to inoculations against diseases.

SUMMARY OF EXTERNALITIES

We have seen that when there are **external costs** the market will tend to **over-allocate** resources to the production of the good in question (as these costs are not borne by the producer). In our example, too much steel was being produced.

On the other hand, when there are **external benefits** the market forces will **under-allocate** resources to the production of that good or service. When there is over- or under-allocation of resources to the production of a good or service because of spill-overs, or externalities, we have cases of **market failure**.

How the Government Can Correct Negative Externalities

Since, by definition, externalities that create market failure will not be corrected by the market, we cannot expect, at least not with the examples we have given, that private individuals will prevent the over- or under-allocation of resources. The government, on the other hand, could correct externality situations in a variety of ways in all cases that warranted such action. In the case of negative externalities, at least two avenues of action are open to the government - special taxes and/or legislation.

1. *Special Taxes.* In our example of a steel mill, the externality problem originates from the fact that air as a dumping-place is costless to the firm. The government can, however, compensate for this flaw by charging a price for the use of air. In other words, the government could make the steel mill pay a tax for dumping its pollutants into the air. The government could attempt to place a tax on the steel mill, commensurate with the cost to third parties from smoke in the air. This, in effect, would be a pollution tax. There is a serious question as to how it should be assessed - at what rate and using what criteria. One way of making the mill pay for use of the air is a tax based on the mill's output of steel. After all, the more steel the mill produces, the more pollution it dumps into the air. But this way of taxing creates a problem. Besides inhibiting the production of steel, it would not provide an incentive for the mill to find ways to reduce the amount

of pollution per unit of output. For example, let us assume that for every tonne of steel produced, ten grams of pollutants are spewed into the atmosphere. If the steel mill is taxed according to the number of tonnes of steel produced by it, it may reduce its total yearly output, but it will certainly not seek ways to reduce the number of grams of pollutants produced per tonne from ten down to, let us say, five. Therefore, an alternative tax system would be one based on the amount of the pollution dumped into the air rather than just a tax on output itself. Then if the steel mill came up with various methods to reduce air pollution, it would pay a lower tax.

No matter what type of tax is used, the supply curve will move leftwards as it did in panel (a) of Figure 1.1. The ultimate effect would be to raise the price to consumers. The equilibrium quantity of steel would fall in our example. But the full cost of its production would be borne by those consuming it.

2. *Legislation*. In order to correct a negative externality, or negative spill-over, arising from steel production, the government could simply specify a maximum allowable rate of pollution. This action would require that the steel mill install pollution-abatement equipment within its facilities, or that it reduce its rate of output, or some combination of the two. In any event, the steel mill's supply curve would again shift leftwards as it did in panel (a) of Figure 1.1.

How the Government Can Correct Positive Externalities

Here the question is: What can the government do when the production of one good spills benefits over to third parties? There are several policy options facing the government:

(1) financing the production of the good or producing the good itself,
(2) special subsidies (negative taxes), and
(3) legislation.

1. ***Government Financing and Production***. If the positive externalities seem to be extremely large, the government has the option of financing the desired additional production facilities so that there will be the 'right' amount of the good produced. In the previous example of inoculations against contagious diseases, the government could finance campaigns to inoculate the population. It could even produce and operate centres for inoculation

2. ***Special Subsidies***. A subsidy is a negative tax; it is a payment made either to a business or to a consumer when the business produces or the consumer buys a good or a service. For example, in the case of youth training, the government subsidizes everyone who is on a youth training scheme by making payments to private firms that provide the schemes. Subsidies, in this case, reduce the net price to employers, thereby causing a larger equilibrium quantity of training and a more skilled workforce for the future community.

3. ***Legislation***. In the case of certain positive externalities, the government can require by

law that a certain action be undertaken by individuals in the society. For example, there are regulations requiring all school-age children to be inoculated prior to entrance into schools. Some people believe that state education itself generates positive externalities. Indeed, we have regulations - laws - that require all children aged 5-16 to attend school.

> ***Key Points 1.2***
> - Negative externalities, or negative spill-overs, lead to an over-allocation of resources to the specific economic activity. Two possible ways of correcting these spill-overs are
>   1. taxation or
>   2. government legislation.
> - Positive externalities, or positive spill-overs, result in an under-allocation of resources to the specific activity. Three possible government corrections are:
>   1. financing the production of the activity,
>   2. subsidizing private firms or consumers to engage in the activity, or
>   3. legislation.

Private Costs, Social Costs, and Externalities

Private Costs

When a business firm has to pay wages to workers, it knows exactly what its labour costs are. When it has to buy materials or build a factory, it knows quite well what these will cost. When an individual has to pay for car repairs, or shoe repairs, or for a concert ticket, he or she knows exactly what the cost will be. These costs are what we term **private costs.** Private costs are those borne solely by the individuals who incur them. They are *internal* in the sense that the firm or household must explicitly take account of them.

Social Costs

What about the situation discussed in this chapter relating to the steel mill that dumps waste products from its production process into the air? Obviously a cost is involved in these actions. When the steel mill pollutes the air people in the neighbouring community suffer the consequences. In other words, the cost of the steel mill's actions are borne by people other than those who own the steel mill. That is, the creator of the cost is not the sole bearer. The costs are not internalized by the individual or firm; they are external. When we add these external costs to internal, or private costs, we get social costs. Pollution problems, and, indeed all problems pertaining to the environment may be viewed as situations where social costs are greater than private costs. Since some economic agents do not pay the full social costs of their actions, but rather only the smaller private costs, their actions are socially 'unacceptable'. In such situations where there is a divergence between social and private costs, we therefore see 'too much' steel production, car-driving, and plastic bag-littering - to pick only a few of the many examples that exist.

ENVIRONMENTAL COST: A PRIVATE OR SOCIAL BILL?

Why is the air in cities so polluted from car exhaust fumes? When drivers step into their cars, they bear only the private costs of driving. That is, they must pay for the petrol, maintenance, depreciation, and insurance on their cars. They cause, however, an additional cost - that of air pollution - which they are not forced to take into account when they make the decision to drive.

Air pollution is a cost because it causes harm to individuals, for example, burning eyes, respiratory ailments, and dirtier clothes, cars, and buildings. The air pollution created by exhausts is a cost that, as yet, individual drivers do not bear directly. The social cost of driving includes all the private costs plus the costs of air pollution, which society bears. Decisions made only on the basis of private costs lead to too much driving or, alternatively, to too little money spent on the reduction of pollution for a given amount of driving.

Consider the example of lights in hotel rooms. Paying guests know that they will not pay any more on any single occasion if they leave their lights on in the hotel room. Of course, the more frequently all guests leave their lights on, the higher will be the cost of running the hotel and the higher will be the average room charge. But for the individual guest at any one point in time, there is no direct cost to being 'wasteful' with energy used for lights. In essence, lights in a hotel are a free good in the eyes of each hotel guest. We predict, therefore, that people will leave lights on more often in hotel rooms than they will in their own homes. We can look at another example and consider clean air as the scarce resource offered to car drivers free of charge. The same analysis will hold - they will use more of it than they would if they had to pay the full social costs.

Externalities Revisited

When private costs differ from social costs we have used the term externalities - because individual decision-makers are not internalizing all the costs. Rather, some of these costs remain external to the decision-making process. Remember that the full cost of using a scarce resource is borne one way or another by others who live in the society. That is, society must pay the full opportunity cost of any activity that uses scarce resources. The individual decision-maker is the firm or the customer, and external costs and benefits will not enter into that individual's or firm's decision-making processes.

It will help to view the problem as it is presented in Figure 1.2. Here we have the market demand curve, DD, for the product X and the supply curve, SS, for product X. As usual the supply curve includes only internal, or private, costs. The intersection of the demand and supply curves as drawn will be at price Pe and quantity Qe. However, we will assume that the production of good X involves externalities that the private business firms did not take into account. These externalities could be air pollution, water pollution, scenery destruction, or anything of that nature.

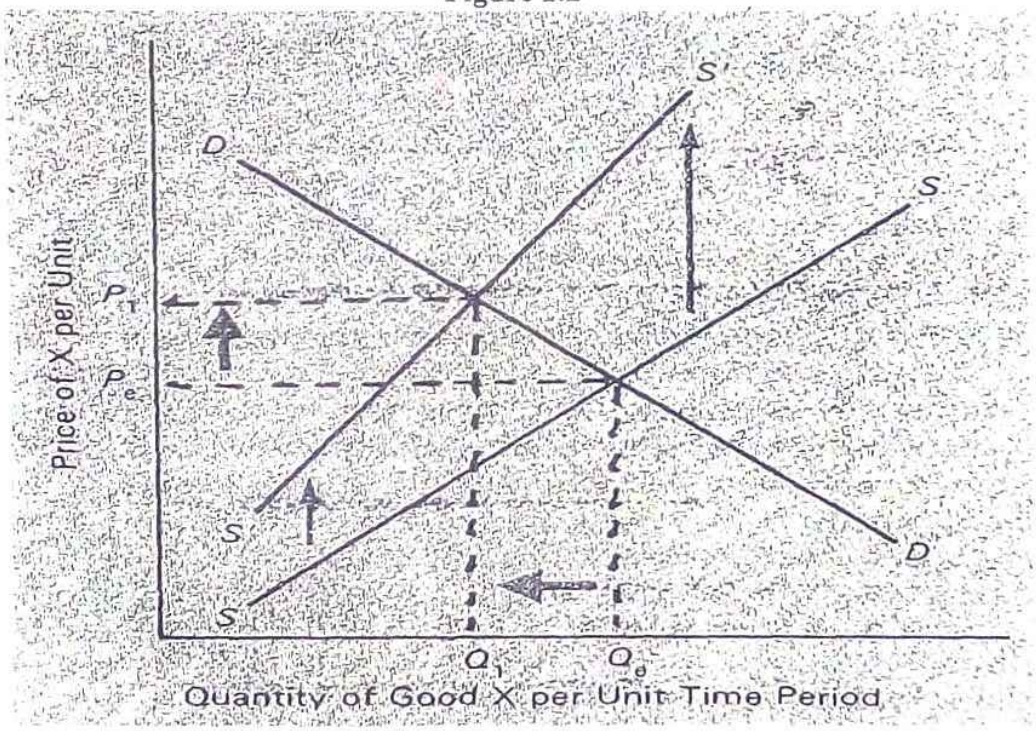
We know that the social costs of producing X exceed the private costs. We show this by

drawing supply curve S'S'. It is above the original supply curve, SS, because it includes the externalities, or the full social costs of producing the product. Now the 'correct' market equilibrium price is Pa, and the equilibrium quantity is Qa. The inclusion of external costs in the decision-making process leads to a higher-priced product and a decline in quantity produced. We can say, therefore, that in an unrestricted situation where social costs are not being fully borne by the creators of these costs, the quantity produced is 'excessive'.

Figure 1.2

Reckoning with Full Social Costs. Here we show the demand for good X as DD. The supply curve, SS represents the summation of the costs to the firm in producing that good. These costs are internal, or private, costs; they do not include any external costs such as pollution of the air or water. If the external costs were included and added to the private costs then we would have social costs. The supply curve would shift upward to S'S'. In the uncorrected situation the equilibrium price would be Pe and the equilibrium quantity would be Qe. In the corrected situation the equilibrium price would rise to P_1 and the equilibrium quantity would fall to Q_1.

Figure 1.2



Moving towards Policies for internalizing Externalities

We can see an easy theoretical option that presents itself as a method of reducing the amount of pollution and environmental degradation that exists. Somehow the signals in the economy must be changed so that decision-makers will take into account all the costs of their actions. For example, in the case of car pollution we might want to devise some method whereby motorists are taxed according to the amount of pollution they cause. To a large extent the

cheaper tax imposed on users of lead-free petrol, in the UK for instance, follows this theory.

Key Points 1.3

- Private costs are those explicit costs that are borne directly by consumers and producers when they engage in any resource-using activity.
- Social costs include private costs plus any other costs that are external to the decision-maker. For example, the social cost of driving includes all the private costs plus any pollution and congestion caused.
- When private costs differ from social costs, externalities exist, because individual decision-makers are not internalizing all the costs that society is bearing.
- When social costs exceed private costs, environmental problems may ensue, such as excessive pollution of air and water. These are problems of externalities.
- One way to make private costs equal social costs is to internalize the externality by imposing a tax or government regulation.
- The taxes imposed should be set equal to the economic damage, or externalities, caused by the pollution-creating activity.

Cost-Benefit Analysis {CBA}

To overcome some of the problems of resource allocation created by the market mechanism, government economists in advanced economies like that of the UK are increasingly employing an investment appraisal technique known as **cost-benefit analysis**. This method of resource allocation, popular since the 1960s, reaches the parts that most methods of resource allocation leave behind. In these analyses the external costs and benefits are considered alongside the internal (private) costs and benefits. Thus the total social costs and benefits are measured. The problem with this technique is that all issues need to be expressed in a common denominator for a 'total price' to be arrived at. The 'total (social) price' will incorporate internal and external costs and benefits.

What is actually measured and how the related monetary value is identified is problematic. The externalities that are listed to a large extent rely upon normative decisions based on value-judgements. These are given monetary values based upon the principle of opportunity cost. For example, when undertaking the cost-benefit analysis of siting London's third airport, noise pollution was quantified on the principle of how much it would cost in double and treble glazing to return the houses concerned to their foregone level of silence.
Cost-benefit analysis studies have also been undertaken to assess the building of motorways. It should however, be emphasized that the technique of CBA is merely a method of identifying externalities; it does not automatically control them.

Key Points 1.4

- Internal costs + external costs = total (social) costs.
- Internal benefits + external benefits = total (social) benefits.
- CBA involves identifying monetary values for all the internal and external costs and benefits of a project allowing a total (social) price to be arrived at.
- The problems with CBA are what to include as 'relevant' externalities and how to quantify these in monetary terms.
- The use of CBA in government departments in advanced economies is increasing.

3. Governments provide Public Goods and Merit Goods

The third area which we identified in our introductory list as a market failure related to the provision of public and merit goods. In reviewing these government-provided goods and services we will, to a certain extent, revise themes that have already been raised under the heading of externalities. The benefits that people get from these particular goods depends not solely on how much they individually have, but also on how much other people have - which is part of the rationale for governments providing them.

Public Goods

In order to explain the precise nature of public goods it is appropriate to begin at the other end of the spectrum and clarify our understanding of **private goods**. Private goods include goods like petrol, wheat, fish, chips, wine, and manufactured commodities. These private goods are distinguished by two basic principles, one can be termed **the principle of rivalry.** This means that if you use a private good I cannot use it. And conversely, if I use a private good you cannot use it. For example, when I use the services of a mechanic he cannot be working at the same time on your car. We compete for the mechanic's services, we are rivals for this resource, i.e. the amount of a mechanic's time is scarce. The mechanics' services are therefore priced according to our levels of demand and the available supply of their time.

The other principle that characterizes a private good is **excludability**. This simply implies that anyone who does not pay for the good or service is excluded from enjoying its benefits. For example, if a road bridge is set up with a toll-gate, then the communications link that the particular bridge offers is available only to those who pay. All others are excluded by the price mechanism. Similarly, if you do not pay for a Football Cup Final ticket you will not be allowed into the stadium to watch the football match.

There is an entire class of goods that are not private goods. These are called **public goods**. In these cases the principles of exclusion or rivalry cannot be applied. They are ***non-excludable*** and ***non-rivalrous*** in their characteristics. That is, they can be *jointly* consumed by many individuals simultaneously without any discriminatory price system being applied. National defence, street-lighting, and protection policy are standard textbook examples of public goods.

CHARACTERISTICS OF PUBLIC GOODS

We can list therefore several distinguishing characteristics of public goods that set them apart from all other goods. (*Sometimes a distinction is made between pure public goods which have both the characteristics described above, and quasi- or near- or impure public goods, which do not. The major features of near-public goods is that they are jointly consumed*).

1. *Public goods are usually indivisible*. You cannot buy or sell ¢50000 worth of our ability to annihilate the world with bombs. Public goods cannot be produced or sold very easily in small units.
2. *Public goods can be used by increasing numbers of people at no additional cost*, e.g. once a lighthouse has been built the first and last ship to pass does so at no extra cost to the lighthouse-keeper; the opportunity cost of an extra ship benefiting from the signal is zero.
3. *Additional users of public goods do not deprive others of any of the services of the good*, e.g. if you use the beams from the lighthouse other ships do not become excluded from its illumination.
4. *It is very difficult to charge people for a public good on the basis of how much they use.* It is nearly impossible to determine how much any person uses or values national defence. It cannot be bought and sold in the market-place.

DISTINCTION BETWEEN PRIVATE AND PUBLIC GOODS

Every economic system produces a mixture of private and public goods. Firms are the units that produce goods or services. The word "goods" is often used in economics to mean any of these outputs or combinations of them. In the production of goods and services, any economic system has usually two sectors. The private sector typically produces private goods. In economic analysis:

Private goods are scarce or valuable resources for which the related property rights belong to individuals who have exclusive rights to enjoying or doing whatever they please with them, in ways that do not go against the laws of that country.

The other set of goods and services produced in a country are called public goods. Most of these are usually produced by public and related institutions that have been set up and provided with funds for this purpose by the government. Of course, in extreme cases, such as would exist under a communist state, most of both public and private goods would be produced by institutions established and run by the state.

In non-communist countries, the government often pays private firms, acting as contractors, to produce many public goods. In economic analysis:

> *Public goods are items or services whose consumption by any individual does not simultaneously reduce the amount available for consumption by others. In addition, the cost of excluding individuals from consuming some amount of any public goods is higher than the revenues that can be got from charging those who consume them.*

Examples of public goods include:

- the maintenance of law and order (through police and military institutions),
- radio and television broadcasts,
- highways,
- afforestation projects that improve the weather,
- environments sprayed against insect pests,
- sports and entertainment provided in open spaces.

If it is financially rewarding to exclude consumers who do not pay for enjoying public goods, there are several methods that can be used. Examples include building high fence walls that enclose cinema halls and the use of electronic devices that have to be purchased by those who wish to watch specially transmitted television programmes.

By their nature, most public goods are not financially rewarding for private firms to provide them. Let us consider one example. Let us imagine the case of a private firm wishing to spray an entire environment to get rid of a mosquito infestation. The cost of buying huge quantities of pesticides and then renting the services of helicopters or airplanes for the task can be very high. The amount of money that this firm has to charge every household or beneficiary must, therefore, be high enough to cover the cost of the service and some profit. Meanwhile, individuals who refuse to pay for the service know that they cannot be excluded from enjoying a much better environment that would be freed of these pests. These individuals who refuse to pay but enjoy the services of public goods are called free riders.

The ever present problem of free riders makes private firms unwilling to supply adequate levels of socially desirable public goods. For these reasons, most public goods are provided by governments. To get the needed resources, governments usually depend on tax monies collected from the citizens. Some of these taxes are then used to recover portions of the cost of making public goods available to the society. Cost recovery has recently become a very important reason why some developing countries have now started charging some modest fees for health, educational and other services that were previously available free of any charges.

Every project by the government uses various amounts of financial and other resources. Indeed, many governments in both the industrial and developing countries have recently been divesting or getting themselves out of their previous conditions of providing goods that can more efficiently be made available by the private sector. This process of governments handing over or selling previous public enterprises to the private sector is referred to as privatization.

FREE RIDERS

This last point leads us to the free-rider problem. It is a problem because it involves a situation in which some individuals believe that others will take on the burden of paying for

public goods such as national defence. Alternatively, 'free riders' will argue that they rec
no value from such government services as national defence or overseas representation a
therefore, really should not pay for it. Consider a hypothetical example: citizens will
taxed directly in proportion to how much they tell an interviewer that they value natio
defence for the following year. Some people will probably tell interviewers that they
unwilling to pay for national defence because they do not want any of it - it is of no value
them. Many of them would end up being free riders especially when they assume that oth
will pay for the desired public good anyway. We all want to be free riders when we belie
that someone else will provide the commodity in question.

Look at the problem as it is represented in Figure 1.3. Here we show the different possib
outcomes depending on whether you decide to pay your share of the annual national defen
budget and whether others decide to pay. If everyone else pays and you pay also, the to
amount of money spent on national defence would be ¢20,000,001,000 per year. If you d
not pay, the total amount for national defence will fall only by ¢1000 to ¢20,000,000,000 pe
year. The difference does not seem to be very much, and, expressed as a percentage of th
total defence budget, it is very small indeed. There are two other possibilities. If no one el
pays and you pay, national defence spending will be only ¢1000 per year, and then if you d
not pay and no one else pays either, there will be no money spent on national defence tha
year.

What is a probable choice that you might make in such a situation? If you pay, either other
will or they will not. If they do not, your ¢1000 is not going to matter much; if they do, you
¢1000 will still not matter much. Why not take a free ride? That's exactly what the free-rid
problem is all about. Public goods, therefore, may be provided in too small amounts if left t
the private sector.

Many products and services in our economy are public goods, e.g. the fire services, th
maintenance of law and order, and overseas representation. There is a very strong case fo
having the government finance them. In fact even Adam Smith, the prime exponent of fre
market forces, recognized that the government must provide them and in most countri
today this is the case.

Figure 1.3

*Scoreboard for National Defence. The free rider is the one who will gladly let everyone el
pay the bill. If you do not pay your share of national defence but everyone else does, the
will still be ¢20 billion per year available for the country's defence.*

	If you pay	If you do not pay
And if everybody else pays	¢20,000,001,000 / year	¢20,000,000,000 / year
And if no one else pays	¢1000 / year	¢0.00 / year

Merit Goods (and Demerit Goods)

Merit goods by comparison differ from country to country. What constitutes a merit good is defined by the political process according to what the government deem to be socially desirable. Once this decision has been taken those goods that are selected are made available free, or almost free, to all citizens, either by the government subsidizing the production or more commonly actually organizing the output themselves. In Ghana, as of now (January, 2006), Primary education is a merit good. Some examples of merit goods in the UK are: museums, ballet and the arts, health services, education, and library provision. Note that there is nothing inherent in any of these particular goods that makes them different from private goods. They can be supplied through the market and in some countries they actually are (e.g. medical care in America).

It is clearly a political decision, therefore, as to what constitutes a merit good, but in general terms they serve two objectives. First, they facilitate a redistribution of real income; as merit goods are largely financed out of progressive taxation - the result is that the poorer citizens get access to a standard of service that they could not otherwise afford. Secondly, by making these goods readily available to all citizens at well below the market-clearing price society can take advantage of positive externalities as individuals become better educated and thus provide a more effective labour force and ultimately a higher standard of living for the country as a whole.

Demerit goods are the opposite of merit goods. They are goods that, through the political process, are deemed socially undesirable. Cigarettes, marijuana and cocaine are just some examples of so-called demerit goods. The way the government exercises its role in the area of demerit goods is by taxing, regulating, or prohibiting their manufacture, sale, and use. Partly, the age restrictions imposed on juveniles purchasing alcohol and tobacco are justified by governments on the basis that these are demerit goods. (Note that there is a subtle difference between making under-age drinking illegal - a demerit good argument - and making drunken driving illegal. The latter law is based on arguments for regulating a negative externality due to its third-party effects.)

Key Points 1.5

- Public goods are jointly consumed. The principles of exclusion and rivalry do not apply as they do with private goods.
- Public goods have the following characteristics:
  (1) they are indivisible;
  (2) once they are produced, there is no opportunity cost of additional consumers using them;
  (3) your use of a public good does not deprive others of its simultaneous use; and
  (4) there is difficulty in charging consumers on the basis of use.
- Merit and demerit goods do not have any inherent characteristics that qualify them as such, rather, we collectively, through the political process, make judgements about which goods and services are 'good' for society and which are 'bad'.
- The provision of public goods and merit goods contributes to a nation's standard of living, as they accommodate positive externalities. In Ghana, a substantial part of government spending involves the provision of these goods.

4. Governments redistribute Income and Welfare.

The price (market) system will allocate nothing to those who cannot pay. Left to market forces owners of factors of production who are paid for their services will have significantly better life chances than their retired, unemployed, disabled, or under-privileged counterparts. Consequently *all* post-war governments in advanced economies - although with differing levels of commitment - are concerned with the distribution of income and welfare.

In general the required redistribution uses *three* systems:

- the system of taxation, especially progressive income tax which involves taxing high-income earners progressively more than the lower paid;
- the provision of merit goods as discussed above, which makes essential services freely available to all; and
- transfer payments. Transfer payments are those payments made to individuals for which no services are concurrently rendered. The main transfer payments in our system include various grants.

THE ROLE OF PUBLIC FINANCE

The following are the three most important ways in which a government interacts with those over whom it governs:

1. Passing and enforcing various laws;
2. Taxing the population, and
3. Spending the money that it has got through taxes or from earnings of its investments on projects that produce benefits for the population.

Public finance is a branch of applied economics that deals with how governments tax and spend money. These activities make people conscious of the existence of their government. Under democratic systems, the manner in which public finance is managed shows the extent to which the government is accountable to the population.

A Closing Note on Government Failure

We have discussed various instances of market failure but we cannot ignore the vulnerability of those in government either. The electorate expect them continually to make correct decisions to difficult questions - yet politicians are only human and may fail occasionally. Indeed, knowing what is genuinely in the 'public's interest' is recognizably a difficult concept. To get a consensus of opinion on a topical economic issue amongst your classmates would be difficult. Similarly, Members of Parliament with their developed political values, established support groups, and often constraints of time and information will understandably find it hard always to reach the right majority decision. Consequently, we arrive at an ironic juncture.

So far throughout this chapter we have justified a role for government intervention on the basis of market failure, and we now close the section by suggesting the possibility of government failure. It would be a foolhardy cynic, however, who resolved this problem by claiming a situation of total failure. Often commentators on these two polar extremes of failure adopt one position or the other as correct. We would suggest that the solution lies in some kind of mix in between.

Key Points 1.6

- All post-war governments in advanced economies are concerned with achieving some kind of 'fair' income and welfare distribution.
- Income redistribution is achieved through three systems:
  - taxation,
  - transfer payments (cash benefits), and
  - merit goods (benefits in kind).
- The various economic objectives identified in this chapter are incompatible with one another and in consequence their order of priority changes according to the government in office.
- Market failure initially justified a role for governments. Government failure suggests a role for markets. The solution to this dilemma lies in between with some kind of mixed economy.

EXAM PREPARATION

MULTIPLE CHOICE QUESTIONS

1. If a firm's private costs of production are not equal to the social costs of its production the government could increase economic welfare by:
   (a) taxing the firm if its social costs exceed its private costs
   (b) taxing the firm if its social costs are less than its private costs
   (c) subsidizing the firm if its social costs exceed its private costs
   (d) taxing other firms if social costs are less than private costs in the firm in question
   (e) subsidizing other firms if social costs are less than private costs in the firm in question.

2. Public goods, such as street-lighting, are not supplied through the ordinary market mechanism because:
   (a) the initial capital cost would be prohibitive
   (b) some households would not be able to afford to make their full contribution towards the cost
   (c) the benefits would not be confined to the buyers, but would automatically be available to non-buyers
   (d) the provision of public goods is essential, and therefore cannot be left to private initiative
   (e) E monopolies would earn excess profits.

For Questions 3, and 4, one or more of the options given may be correct. Select your answers by means of the code set out in the grid:

A	B	C	D
1, 2, 3 all correct	1, 2 only correct	2, 3 only correct	1 only correct

3. Because of the deficiencies of the market mechanism the state might intervene to ensure an adequate supply of:
   1 public goods
   2 merit goods
   3 inferior goods.

4. The private-enterprise system of economic organization is criticized on the basis that in a market economy
   1 private costs do not reflect the social costs of economic activity
   2 collective consumption goods are not provided in sufficient amounts
   3 governments know what the people want.

5. A particular problem in using cost-benefit analysis to appraise public investment projects is that:
   (a) interest rates can be unpredictable
   (b) social costs can differ from private costs
   (c) not all relevant items can be quantified
   (d) public investment projects can be unprofitable.

6. Public goods, such as street-lighting, are not supplied through the ordinary market mechanism because
   (a) the initial capital cost would be prohibitive
   (b) some households would not be able to afford to make their full contribution towards the cost
   (c) the benefits would not be confined to the buyers, but would automatically be available to non-buyers
   (d) the provision of public goods is essential, and therefore cannot be left to private initiative
   (e) monopolies would earn excess profits

REQUIRING BRIEF RESPONSES

1. Pollution is considered to be an example of a negative externality. Why?

2. What is a public good and what example can you think of?

3. What is the difference between a private good and a merit good?

4. Explain the term 'market failure' and give two examples.

5. Describe the 'free rider' problem and indicate how it is best solved.

6. State the resource allocation problem caused by negative externalities. Identify two possible ways by which the government can solve them

7. What is the difference between a progressive and a regressive tax? Give examples.

RELATED ESSAY QUESTIONS

1. Distinguish between public goods and merit goods. What are the arguments for and against the provision by the state of merit goods?

2. Explain the terms 'external costs' and 'external benefits'. Examine the relevance of these concepts when considering a proposal to build a nuclear power station.

3. Assess the economic arguments that the production of environmental films should be subsidized by government.

4. 'Left to itself the market mechanism is incapable of allocating scarce resources in an efficient manner.' Discuss.

5. In what sense can river pollution and traffic congestion be viewed as economic problems? Can economics make any contribution to the solution of these problems?

6. In what senses could the market system 'fail'? To what extent could your arguments be used to justify the production and distribution of goods and services by the public sector?

CHAPTER TWO

PUBLIC FINANCE: TAXATION AND PUBLIC SPENDING

Introduction

It is worth stressing at the outset that taxation and public spending are 'opposite sides of the fiscal coin'. Thus an argument for (or against) public spending is usually also an argument for (or against)

TAXES

Governments have no funds and resources of their own, unless these have first been got from the population. Governments may also earn money from enterprises that they operate. A few of them make money, but they could have made much more. In practice, most government enterprises are inefficient or waste resources. Many of them rather lose money. The government then has to continue helping them with money or else they cease to exist. Recently, many governments in Africa and elsewhere have sold former public enterprises to private firms. Therefore, privatization reduces the importance of public enterprises as sources of revenues for the government. The most important source of funds for most governments is through taxes. For our purposes:

A tax is a compulsory levy charged by a government or public authority to pay for its expenditure. A government demands this compulsory payment, called tax, from its citizens or any other economic units that it can force to make the payment.

Taxes can be either:

1. Money payments, or
2. Non-money payments, referred to as payments-in-kind. Payments-in-kind can be in physical items that must be given up, for example, quantities of grain or a number of livestock. They could also be services that have to be given, such as hours of work on community or other projects.

Normally, people do not like to pay taxes. If they can, many of them find ways of avoiding, dodging or reducing the amount of taxes they have to pay.

Whenever it is possible, part of a tax will be passed on to others by the initial point at which the tax was paid to the government. This is more easily done by firms that are selling goods or services. The point where a tax or part of it is finally paid and cannot be transferred to

others for payment is called the incidence of that tax. The incidence of a tax is influenced by the conditions of demand and supply of the affected goods and not by any individual or government.

A government manages the economy through two types of policies.

- One of these is through monetary policies.
- The other, public finance, is the branch of applied economics which analyses how governments get and use funds and other valuable resources. The fiscal policies of a government deal with all the aspects of its taxes and expenditure. For example, an aspect of a government's fiscal policy can be to provide more services to poorer people, as part of a national social policy of narrowing the gap in the material conditions of living between the relatively wealthy and the relatively poor in the society.

UNDERLYING CONCEPTS: TAXATION AND PUBLIC SPENDING

1. TYPES OF TAXATION

A tax, which is a compulsory levy charged by a government or public authority to pay for its expenditure, can be classified in a number of ways:

i. **According to who levies the tax:** Most taxes are levied by **central** government, but the local rate is an example of a **local government tax**. A few taxes, such as the **water rate** and **airport taxes**, are levied by **non-governmental** public authorities.

ii. **According to what is taxed**: The major categories here are **taxes on income, expenditure and capital,** though other categories include **pay-roll** and **poll taxes**. Personal income tax is the most important tax on income in Ghana, though employees' Social Security and National Insurance (SSNIT) contributions and corporation tax (a tax on company income or profits) are other examples. The Inland Revenue is the department of the civil service mainly responsible for collecting taxes on income and capital, whereas the Board of Customs and Excise collects expenditure taxes. Expenditure taxes are usefully divided into ad valorem or percentage taxes such as **value-added tax (VAT)**, and **specific taxes** (or **unit taxes**) which include the excise duties on tobacco, alcohol and petrol. A specific tax on, for example, wine may be levied on the quantity of wine rather than on its price. Similarly, a **user tax** such as a **television licence** or **motor vehicle tax** is levied irrespective of either the price or the current market value of the TV set or car.

iii. **Direct and Indirect Taxation:** These concepts are often used interchangeably with taxes on income and expenditure, though it is not strictly true that a tax on spending must be an indirect tax. Income tax is a direct tax because the income receiver, who benefits from the income, is directly liable in law to pay the tax (even though it is frequently collected through the PAYE scheme from the employer). In contrast, most taxes on spending are indirect taxes since the seller of the good, and not the purchaser who benefits from its

consumption, is liable in law to pay the tax. Nevertheless, as we shall see later, the seller usually tries to pass on the incidence of the tax to the purchaser by raising the price of the good by the amount of the tax! There are, however, examples of direct taxes on expenditure, such as the stamp duty paid by the purchaser rather than by the seller of a house.

iv. **Progressive, Regressive and Proportionate Taxation:** All of the taxes mentioned above can fit into one of three types of taxation system - proportional, progressive, or regressive. In a progressive tax system a progressively larger proportion of income is paid in tax as income rises, while in a regressive system a progressively smaller proportion is paid. A tax is proportionate if exactly the same proportion of income is paid in tax at all levels of income.

Proportional Taxation

A system of proportional taxation means that as an individual's income goes up, so, too, do his or her taxes in exactly the same proportion. Taxpayers at all income levels end up paying the same percentage of their income in taxes. In other words, if the proportional tax rate were 20 per cent, an individual with an income of ¢100,000 would pay ¢20,000 in taxes while an individual making ¢1,000,000 would pay ¢200,000 the identical 20 per cent rate being levied on both.

Progressive Taxation

Under progressive taxation, as a person's income increases, the percentage of income paid in taxes increases; or to express it formally, the marginal tax rate is greater than the average tax rate. To understand this we need to examine these terms. The marginal tax rate is expressed as

$$\text{Marginal tax rate} = \frac{\text{change in tax}}{\text{change in income}}$$

The word marginal merely means incremental here.

We should compare the marginal tax rate with the average tax rate, which is defined as:

$$\text{Average tax rate} = \frac{\text{total tax}}{\text{total income}}$$

The difference between the marginal and the average tax rate can be seen in Figure 2.1 In this example of a progressive tax system the first £100 in income is taxed at 10 per cent, the next £100 at 20 per cent, and the third £100 at 30 per cent.

Figure 2.1

Progressive Tax System: *The percentage of tax taken out of each additional pound earned goes up, that is, the marginal tax rate increases progressively with income. Therefore, the average tax rate is less than the marginal tax rate in a progressive tax system. Whereas, in a proportional tax system, the marginal tax rate is constant and always the same as the average tax rate.*

Income	Marginal rate	Tax	Average rate
£100	10%	£10	$\frac{£10}{£100} = 10\%$
£200	20%	£10 + £20 = £30	$\frac{£30}{£200} = 15\%$
£300	30%	£10 + £20 + £30 = £60	$\frac{£60}{£300} = 20\%$

Regressive Taxation

With regressive taxation, a smaller percentage of income is taken in taxes as income increases. The marginal rate is below the average rate. The following is an example of regressive taxation. Assume that the more income a family earns, the lower the percentage of its income is spent on food purchases. Now assume further that the government obtains all of its revenues from a 20 per cent sales tax on food purchases. Since food purchases constitute a larger proportion of total expenditure for poor people than for rich people, the percentage of total income that would be paid in food taxes under such a system would fall as income rose. It would be a regressive system.

Progressive, regressive and proportionate taxes can therefore be defined also in terms of the marginal and average tax rates. The marginal tax rate measures the proportion of the last cedi paid in tax as income rises, whereas the average tax rate at any level of income is simply the total tax paid as a proportion of total income. In the case of a progressive income tax, the marginal rate of tax is higher than the average rate, except when no tax at all is paid on the first band of a person's income. If income tax is regressive, the marginal rate of tax is less than the average rate, while the two are equal in the case of a proportionate tax.

You should note that in these definitions the word **progressive** is completely **'value neutral'**, implying nothing about how the revenue raised by the government is spent. Nevertheless, progressive taxation is likely to be used by the government to achieve the social aim of a 'fairer' distribution of income. However, progressive taxation cannot by itself redistribute income - a policy of **transfers** in the government's public spending programme is required for this. Progressive taxation used on its own will merely reduce **post-tax income differentials** compared with **pre-tax differentials.**

Key Points 1.7

- Taxes are mainly levied by central government and enable it to finance a large part of its spending.
- The two main forms of tax are direct and indirect. The former are taxes on income (of which there are many forms) and the latter are taxes on spending.
- We can identify other forms of tax which are not necessarily administered or collected by the central government, e.g. airport taxes.
- We can classify tax systems into proportional, progressive, and regressive, depending on whether the marginal tax rate is the same as, greater than, or less than the average tax rate as income rises.
- Marginal tax rates are those applied to marginal tax brackets, defined as the spread of income over which the tax rate is constant.

2. TYPES OF PUBLIC SPENDING

Amongst the various divisions that can usefully be made between types of public spending are those between **central** and **local government spending,** and between **capital** and **current spending**. Capital spending involves **public** or **social investment** in a project (or **public work**) such as a new hospital, school or motorway. Current spending includes items such as the wage costs of staffing and the maintenance costs of running existing capital assets.

Perhaps the most important distinction to be made between types of public spending is between **real** and **transfer expenditure**:

(i) **Real expenditure:** Real expenditure occurs when the government directly provides goods and services which add to national output. **All capital** spending is real expenditure, as is the current expenditure on the wages and salaries of civil servants, local government officers, teachers, police, the armed forces and workers in the National Health Service. In contributing directly to output, real expenditure uses up scarce resources; indeed it is sometimes known as the **'direct command of resources'** by the government.

(ii) **Transfer expenditure:** Conversely, transfer expenditure merely redistributes income between different members of the community. Tax revenues are used to provide **income** via pensions, welfare benefits, grants and subsidies both to households in the personal sector and to firms within the corporate sector. The various forms of regional and industrial aid and assistance, including the transfers to nationalized industries, are an important part of total transfers. Transfers do not contribute directly to production although their administration uses up scarce resources, and indeed transfers to low-income groups usually encourage consumption since poorer people have high **marginal propensities to consume**.

Massive transfers from central to local government also take place within the public sector. A large part of the spending of local authorities is financed in this way. Interest payments on past government borrowing are a form of transfer from taxpayers to those people who have lent to the government. Strictly, however, the term transfer payment is restricted to payments which are not made in return for some productive service.

ESSENTIAL INFORMATION

1. THE PRINCIPLES OF TAXATION

Adam Smith's four principles or canons of taxation are commonly used as the starting-point for analyzing and evaluating the operation of a tax system. Adam Smith suggested that taxation should be equitable, economical, convenient and certain, and to these we may also add the canons of efficiency and flexibility:

(i) **Equity**: A tax should be based on the taxpayer's ability to pay. This principle is sometimes used to justify progressive taxation, since the rich have a greater ability to pay than the poor. A tax system should be fair, but there are likely to be different and possibly conflicting interpretations of what is fair or equitable.

(ii) **Economy**: Collection of a tax should be easily and cheaply administered so that the yield is maximized relative to the cost of collection.

(iii) **Convenience**: The method of payment should be convenient to the taxpayer.

(iv) **Certainty**: The taxpayer should know what, when, where and how to pay, in such a manner that tax evasion is difficult. (Tax evasion is the illegal failure to pay a lawful tax, whereas tax avoidance involves the arrangement of personal or business affairs within the law to minimize tax liability.)

(v) **Efficiency:** A tax should achieve its intended aim without side-effects. If for example the raising of the top rate of income tax, in order to raise revenue, results in increased disincentives to work, then the tax is inefficient. Since it is usually impossible to avoid all the undesirable side-effects of a tax, the tax system should attempt to minimize them.

(vi) **Flexibility**: If the tax system is used as a means of economic management then, in order to meet new circumstances, certain taxes may need to be easily altered.

Further to the above criteria, there are some general rules that should also guide governments on matters dealing with how they should tax. By using the following general rules those who are taxed would feel that there is fairness in how they are taxed:

1. **Vertical equity**: Under this principle, the amount of taxes that the government levies depends on the relative abilities to pay them by the various groups within the population. The more wealthy people pay more, while poorer people pay less. Governments use this principle for their taxes on wealth or property and those on income.

2. **Horizontal equity**: This means that individuals or firms that benefit from similar types, classes and volumes of income, privilege or access to any specified resources or live under similar circumstances must be taxed equally. There should not be arbitrary exemptions, favours or privileges granted to some and denied to others. Under this rule of equity, economic activities in rural areas could be taxed less, while those in urban centres could be taxed higher. However, within each of these areas, persons or firms engaged in similar types of activities and volume of earnings must have the same set and size of taxes.

   A tax that covers many more institutions and persons is said to have a wide base, while one that is paid by a smaller number of persons within a larger population has a narrow base. The bases are the various sources or activities on which a tax would be levied. Examples include: income, wealth, property, consumption, or expenditure. The more bases a government uses, the greater its sources of tax revenues.

3. **Taxes reduce the activities on which they apply:** Taxes tend to reduce the volume of the activities that are taxed. Therefore, if the purpose is to get more revenues, then tax levels should not be so high as to:
   a. Drive out human and nonhuman resources from economically desirable activities, or
   b. Give incentives for people to dodge them.

4. **Efficiency in government: There are two aspects of this efficiency:**
   a. There must be effective administration that ensures that all those who are to pay a tax do so. The more of the people who pay any specified tax, the wider the tax net. A narrow tax net means that those who are made to pay the tax are a smaller proportion of those who should pay it.
   b. Most people must reasonably be satisfied that they are generally receiving equivalent or superior value for the taxes they are forced to pay. The more democratic a government is, the more accountable to the population it is likely to be, in terms of its fiscal and related policies.

2. THE AIMS OF TAXATION

There are many reasons why governments tax. The aims of taxation should not be confused with the principles or canons of taxation, although an aim may well be to arrange the tax system as much as possible in accordance with the principles of taxation. It is useful to distinguish between a number of aims or objectives of taxation and to note how the importance attached to some of the objectives has varied according to the changing fashions in economic thought:

(I) **Revenue raising:** Governments have no money of their own, except whatever they get from the population. Taxes are normally the most important sources of government revenues for most countries. Thus one of the oldest and most obvious aims of taxation is to raise revenue so as to pay for government expenditure. Before the Keynesian 'revolution' of the 1930s most economists believed that revenue-raising was by far the most important objective of taxation. Indeed many went further and argued that the levels of both public spending and taxation should be as low as possible, with the government restricting its activities to the provision of goods and services that could not be provided adequately and privately through the market. According to this pre-Keynesian or neo-classical view, recently revived in modern monetarism, a government should engage in the financial orthodoxy or 'sound finance' of balancing its budget.

(II) **The correction of market 'failures':** In the traditional view we have just described, the primary purpose of government intervention in the economy is to correct or to reduce the various market failures. A government may be justified in using taxation to:

(a) **Tax monopoly profits,** both to deter monopoly and to remove the 'windfall gain' accruing to a monopolist as a result of barriers to entry and inelastic supply.

(b) **Finance the collective provision of public goods and merit goods:** The market might fail to provide public goods such as roads and defence, while education, health care and other merit goods might be under-consumed at market prices.

(c) **Discouraging specified activities:** For various reasons, including those listed below, the government or some of the population may consider certain activities as undesirable within a society. Therefore, heavy taxes **may** be **used** to discourage these activities. The following are some examples:

i. *Adverse effects on the physical health of consumers-*. The consumption of alcohol, tobacco, certain types of entertainment, etc., may be considered in the society as undesirable and should be severely reduced.

ii. *Potential pollution to the environment*: Some productive activities can release toxic and lethal substances into rivers, lakes, the sea, the atmosphere or onto land. Taxes can be used to force the offending firms to use cleaner methods or to migrate to other countries that do not exercise similar care. For example, many firms from the wealthy countries have moved the dirtier or polluting aspects of their manufacturing processes to developing countries.

iii. *Potential for fomenting social discontent and unrest*: These include items described as luxuries or prominently expensive goods, e.g., certain types of very expensive cars.

iv. *Normally harmless activities:* Some of them may also be discouraged by taxes. For example, taxes may be used to discourage foreign travel by a government wishing to conserve national earnings of foreign exchange. These scarce resources would then be available for projects that the

government considers to be of higher national priority. Heavy taxes can be put on these activities or items, with the aim of reducing:

- The number of individuals likely to engage in them, and
- The volume of supply into the market of the affected products or services.

(d) **Alter the distribution of income:** The government may decide that the distribution of income resulting from unregulated market forces is undesirable. The wealthy can be taxed more heavily than the relatively poorer members of the population. These types of taxes include: taxes on income, wealth and the estates of deceased persons.

Taxation and transfers can be used to modify the distribution of income resulting from market forces

(III) **Discouraging imports**: These are referred to as tariffs and are often used to protect local businesses from competitive goods produced outside the country. These taxes make the imported items to be more expensive in the importing country, as compared with substitutes that are locally produced. This is a persisting strategy that the industrial countries use to limit access to their markets by cheaper items from developing countries.

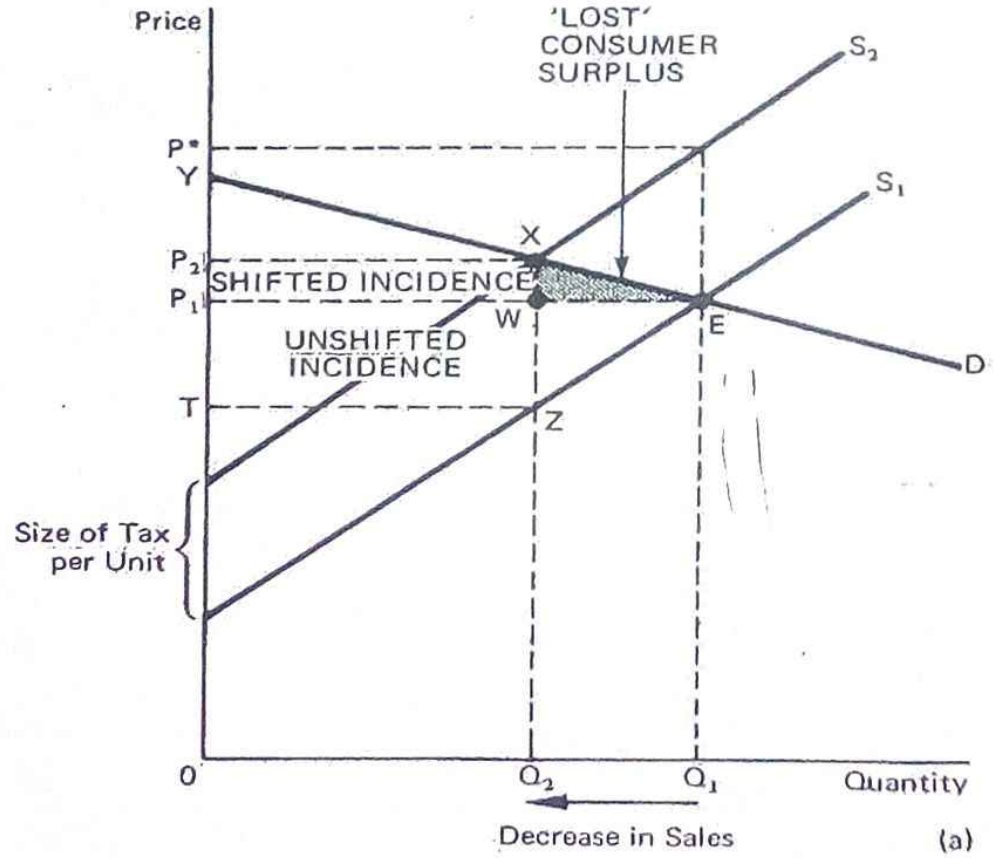
(IV) **Exhibition of administrative power:** A government might wish to extend its administrative power to isolated regions or over a given population. It can use taxes as a means of showing its presence and exercising its authority

(V) **Keynesian economic management:** While Keynesians certainly accept that taxation should be used to achieve such objectives as the provision of public goods, and the switching of expenditure away from demerit goods, they go much further by arguing that taxation should also be used to correct what they regard as the greatest market failure of all: the tendency for unregulated market forces to produce unemployment and unacceptable fluctuations in economic activity. Keynesians have advocated the use of taxation, public spending and the budget deficit as policy instruments in a discretionary fiscal policy aimed at controlling the level of effective aggregate demand in the economy to achieve the objectives of full employment and stable economic growth, without an excessive inflationary cost. Monetarists, however, reject the use of the demand management techniques involved in a discretionary fiscal policy, and support instead the older view that the government should balance its budget and restrict the role of public finance to the correction of more conventional market failures at the micro-economic level.

3. THE INCIDENCE OF TAXATION

The **formal incidence** of a tax refers to which particular tax-payer is directly liable to pay the tax to the government. In the case of indirect taxes upon expenditure such as VAT, the question arises whether the seller of the good who bears the formal incidence can **shift** the **incidence** or **burden** of the tax onto the purchaser by raising the price by the full amount of the tax. A firm's ability to shift the incidence of a tax depends upon price elasticity of demand. Figure 2.2 (a) illustrates the situation where demand is relatively elastic and only a small proportion of the tax can be successfully shifted.

Figure 2.2 (a) Elasticity and taxation - the ability of a supplier to shift the incidence of an expenditure tax depends upon elasticity of demand



The imposition of a tax raises a supplier's costs; thus at each price the firm is prepared to supply less. If the tax is a specific or unit tax charged at the same rate irrespective of the good's price, the supply curve will shift **upwards**, from S_1 to S_2, the **vertical distance** between the two curves showing the tax per unit. If all the tax is to be successfully shifted, the price must rise to P*. **This will only happen if demand is completely inelastic.** In any other circumstance, **some** consumers will reduce their purchases as the price rises. However, many consumers will still want the good and so the price is bid up from P_1 to P_2. The size of

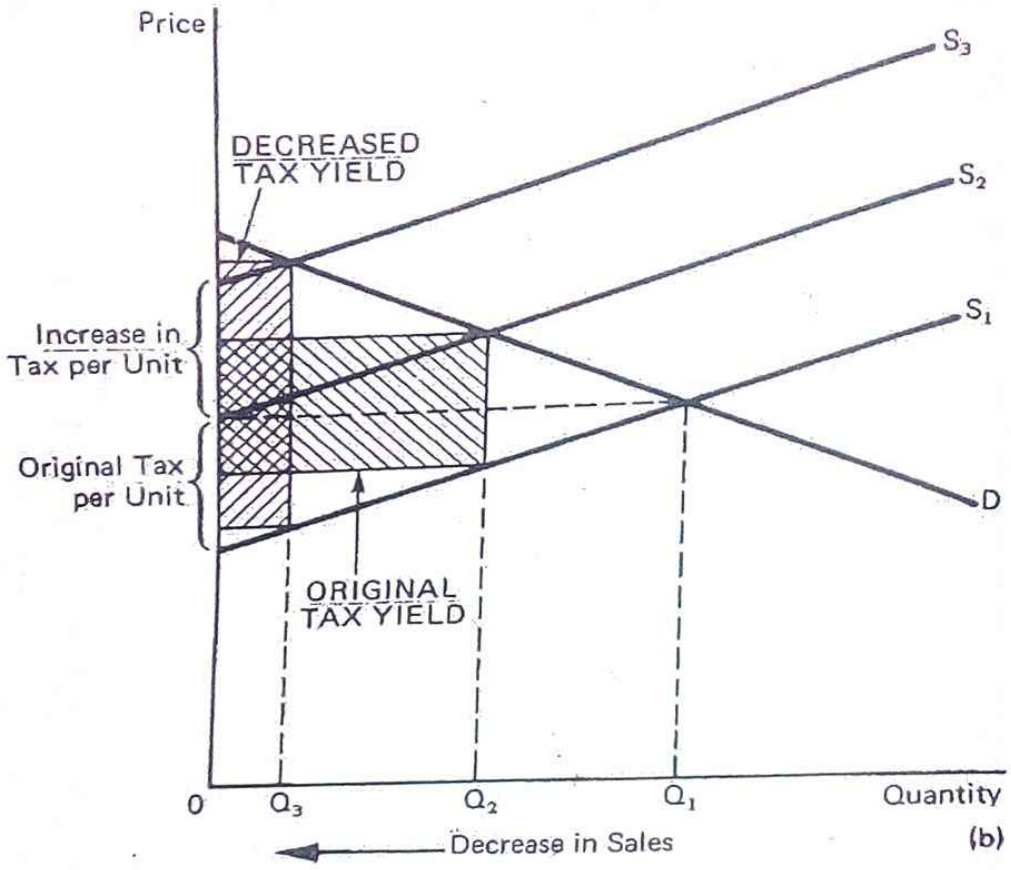
the government's tax revenue is determined by the amount bought and sold at the new equilibrium (Q_2) multiplied by the tax per unit. This is shown by the rectangle $TZXP_2$.

You should now note that the part of the tax rectangle **above** the initial equilibrium price, P_1, represents the successfully shifted incidence of the tax, whereas the part of the tax rectangle **below** P_1 cannot be shifted and must be borne by the supplier. When demand is relatively elastic, only the smaller proportion of the tax can successfully be shifted.

4. THE TAX YIELD

If the principal aim of a tax is to raise revenue, the government will wish to maximize the tax's **yield**. In the case of taxes upon expenditure the government needs to consider the price **elasticities of both demand and supply** of the goods upon which taxes are levied. When a tax is first introduced, it will produce a positive yield providing that at least some of the good is bought and sold after the imposition of the tax. However, the quantity bought and sold will usually fall after the imposition of a tax, so the government may not receive the revenue it was expecting. If the size of the tax is increased, the absolute size of the government's revenue may rise, fall, or indeed stay the same, depending on the elasticities of supply and demand. Figure 2.2 (b) illustrates the effects of an increase in taxation when demand and supply are both relatively elastic. In this case the tax yield falls. Although the government receives a larger tax revenue from each unit bought and sold at the new equilibrium, the loss in revenue resulting from the fall in sales more than offsets the revenue gain. When demand and supply are relatively inelastic, however, government revenue will increase.

Figure 2.2 (b) Elasticity and taxation - an example of a tax increase producing a fall in the government's tax revenue when demand and supply are both relatively elastic



Some important public policy implications result from this analysis.

If the government wishes to **maximize revenue** it should tax as many goods and services as possible. Not only will this **widen the tax base**, but it will also reduce the elasticity of demand for the bundle of goods and services being taxed, taken as a whole. If only one good is taxed, demand is likely to be relatively elastic since untaxed goods are likely to contain some fairly close substitutes!

Conversely, if the government aims to use taxation to **switch expenditure**, for example away from a **demerit good** such as tobacco, it should tax specific types of goods rather than wide categories. On this basis it could introduce different rates of taxation, for example taxing high tar and low tar cigarettes at different rates in order to switch expenditure away from the more harmful good. In a similar way, it can use **tariffs** or **import duties** to switch expenditure towards home-produced goods. In this way there may be a significant '**trade-off**' between the **revenue-raising** and the **expenditure-switching** aims of taxation.

5. TAXATION AND CONSUMER SURPLUS

Consumer surplus is the **utility obtained by consumers from the goods and services they purchase, which is valued over and above the price paid.** Essentially, consumer surplus is a measure of welfare; the more consumer surplus a person obtains, the greater his personal welfare. At the initial price of P_1 in Figure 2.2 (a), consumer surplus is shown by the triangle P_1EY. The imposition of a tax reduces consumer surplus to the smaller triangle P_2XY. The question now arises as to what happens to the consumer surplus no longer received by the purchasers of the good or service. The answer is that the part shown by the rectangle P_1WXP_2 has been **transferred to the government** in the form of **tax revenue**, but the part represented by the small triangle WEX is **completely 'lost'**. On the basis of this analysis, economists have argued in favour of reducing taxes to as low a level as possible; the lower the rate of taxation, the smaller the loss of consumer surplus.

However, the conclusion is not as clear-cut as is suggested by this analysis. Low-income groups are likely to obtain a greater utility from an extra pound of income (or from the goods and services an extra pound can purchase) than high-income groups. Correspondingly, the welfare loss experienced by a rich person who loses a pound in taxation is likely to be smaller than the welfare gain accruing to a poor person receiving the same pound in the form of a transfer payment. This argument can justify progressive taxation and the redistribution of income through transfer payments. (The effect of taxation upon consumer surplus is very similar to what happens when the **formation of a monopoly** raises the price of a good. Part of the consumer surplus is transferred to the monopolist as a **monopoly profit**, but part is 'lost' to everyone.)

6. OTHER ASPECTS OF TAXES ON INCOME AND EXPENDITURE

(i) **Taxation and Incentives:** It is often argued that a progressive income tax damages the economy through its effects on personal incentives. After all, the most obvious way legally to avoid an income tax is to work fewer hours, **or** even to stop working altogether. It is argued that expenditure taxes are preferable to income tax because they have no effect on the **choice between work and leisure**. Instead expenditure taxes affect the choice between **saving** and **spending**, and they also switch expenditure into the consumption of untaxed goods and services.

Nevertheless, economic theory **does not prove** that an increase in income tax **inevitably** must have a disincentive effect upon, personal effort. If the supply curve of labour is upward-sloping, a disincentive effect will result, since a tax increase is equivalent to a wage cut and less labour is supplied as wages fall. But in circumstances where workers aspire to a 'target' disposable income, when the supply curve of labour is perverse or backward-bending, a tax rise will mean that people have to work longer to achieve their desired target income. The tax is an incentive to effort!

(ii) **Fiscal Drag and Fiscal Boost: Fiscal drag** occurs in a progressive income tax structure when the government fails to raise **tax thresholds** or personal tax

allowances at the same rate as inflation. Suppose that prices and all **money incomes** double. In the absence of taxation **real incomes** will remain the same. However, **real disposable incomes** will fall if inflation drags low-paid workers, who previously paid no tax, across the tax threshold to pay tax for the first time. In a similar way, higher-paid workers may be dragged deeper into the tax net, possibly into higher tax bands where they will pay tax at steeper marginal rates. In these circumstances the government's total revenue from income tax will rise faster than the rate of inflation, even though the tax structure has not been changed.

Conversely, in times of inflation **fiscal boost** is likely to reduce the **real value** of specific expenditure taxes (but not of ad valorem taxes such as VAT). Unless the government adjusts the rate of specific taxes to keep pace with inflation, their **nominal value** will stay more or less the same, but their real value will be eroded.

The simultaneous occurrence of fiscal drag and fiscal boost (such as might occur in the period of rapid inflation) shifts the structure of taxation away from taxes on expenditure and towards taxes on income. This can be avoided either by replacing progressive income tax with a proportionate tax, and specific expenditure duties with ad valorem taxation, or by **indexing** personal tax allowances, income tax bands, and the rates at which specific duties are levied.

(iii) **The Poverty Trap and the Unemployment Trap:** The vulnerability of the tax structure, in a country like the UK, to the process of fiscal drag is closely related to the emergence of a phenomenon known as the **poverty trap**. The poverty trap occurs because the **tax threshold at which income tax is paid** overlaps with the **ceiling at which means-tested welfare benefits cease to be paid**. If a low-paid worker is caught within this zone of overlap, he not only pays tax and National Insurance contributions on an extra pound earned, but he also loses part or all of his right to claim benefits. The resulting 'marginal tax rate' may be very high indeed, sometimes over 100 per cent.

The existence of the poverty trap supports the argument that the major disincentives to personal effort resulting from the structure of taxation and welfare benefits in the UK are experienced by low-paid rather than by highly paid workers. Not only is the 'effective marginal tax rate' paid by the lower income groups frequently higher than the top rate of 60 per cent paid by the well-off; poorly paid workers are likely to experience less job satisfaction and to have less scope for perks and fringe benefits. Indeed the low-paid may be tempted to escape from the poverty trap either by **avoiding** tax through not working at all and living off benefits, thus becoming trapped in unemployment, or by **evading** tax through working in the **untaxed 'hidden economy'** or **Black Economy.**

ENGEL'S LAW AND TAXES

Engel's law says that as a family's income increases, smaller proportions of it would be spent on food. The relationship between changes in income and the related changes in consumption is also easily calculated through the use of the formula of income elasticity of demand.

Engel's law has often been used to describe the following two groups of goods and services:

(a) **Essential goods:** These are goods and services that some people label as very critical for human survival. Examples include food, basic shelter (housing) and basic health. These are also the type of items that take most of the income of poorer people within the population.

(b) **Luxuries:** These are considered by most people as not critical for physical well-being. People can stop or reduce the amounts they use of them and they will still be able to live. In both relative and absolute terms, these are items on which the wealthy in the society spend more of their incomes.

This distinction between essential goods and luxuries is often used in decisions about taxes. As much as it is possible, governments wishing to raise revenues put higher taxes on luxuries. They normally avoid taxing essential goods, because these take higher proportions of the incomes of relatively poorer families whose welfare should not be made worse.

DIRECT TAXES AND INDIRECT TAXES

In most developing countries, taxes are easier to collect from persons and businesses in the modern sector of these economies. In contrast, they are more difficult to collect from activities and results (e.g., outputs and incomes) in the informal sector. This is because the cost of collecting these taxes can be higher than the revenue that the government can get from these taxes that may be levied in the informal sector.

Meanwhile, all taxes can be divided into two groups: direct and indirect, as discussed below:

DIRECT TAXES

People who pay *direct* taxes cannot shift the incidence or burden of paying any portion of them onto some other individuals. Examples of direct taxes include:

1. **Lump-sum tax:** This is a sum of money or a specified quantity of some resource that has to be paid at one point in time, and is not related to how much has been produced of any final goods or services. Lump-sum taxes include poll taxes (levied on each adult to pay) and various payments for the registration of business or motor vehicles, permits or licences to operate motor vehicles, hunt, etc.

2. **Income taxes:** This is a tax paid on the incomes that have been earned during a specified period, e.g., one year. The following are the two versions of this tax:

   a. ***Personal income tax*:** These are levied on all types of incomes earned by individuals. These incomes include: salaries, wages, rents, dividends (i.e., earnings from shares that an individual may have in business enterprises) and interest income (i.e., earnings from lending money, e.g., on bonds),

   b. ***Company tax*:** These are levied on incomes earned by firms and are sometimes referred to as profits taxes or income tax on companies.

   The following are the two ways in which these taxes are paid to a government:

   a. ***By the payer of the tax*:** Whoever pays the tax calculates his tax liability and then pays this directly to the government. This method is used by self-employed persons and institutions that employ other people,

   b. ***The PAYE system*:** PAYE stands for "Pay As You Earn". It is the British method of automatically deducting income taxes from the income of employees. In the USA, this is referred to as "income tax withholding".

3. **Property or wealth taxes:** These are put on the assessed market value of tangible items of wealth, usually real estate property (i.e., buildings and land).

   The market value of real estate property changes with time and location. Let us imagine two buildings that are identical in every respect. However, one of them is in a more desirable environment (e.g., at the centre of the capital city), where there is very high demand for it, as shown in its high rents. This building would have a much higher market value than its copy located in a remote village in the rural areas of the same country. Therefore, the same rate of a property or wealth tax (e.g., 5 per cent) on each of these two identical buildings would bring in more tax revenue from the one in the city.

   Where buildings are rented, it is possible that some or all of the tax could be passed on to those renting them. The proportion of the tax that is passed on to those renting buildings will depend on the respective elasticities of the demand and supply curves for rentable facilities. Therefore, these taxes would be indirect taxes.

4. **Capital gains tax:** Capital refers here to land, buildings and securities that were bought on the stock exchange. When a capital asset is sold at a price higher than it was first bought, there is a capital gain. Some countries levy taxes on the increase in value of capital assets, particularly when the owners sell these assets to reap the gains.

5. **Death duties:** These are levied on the assets left by a deceased. These taxes can be made very progressive, mainly for: (a) Gaining more revenue for the government, and (b) in efforts at reducing any tendency for wealth to pile up in the hands of a few individuals or families in the society.

ADVANTAGES OF DIRECT TAXES

1. **Incidence is certain:** There is no doubt about those who bear the burden or incidence, since those who pay are known in advance. No part of these taxes can be passed on for others to pay.

2. **Ease of knowing their effects:** It is relatively easy to monitor the effects of these taxes and to adjust them or remove them, if necessary.

3. **Progressivity:** Most direct taxes are relatively easy to make progressive and, therefore, to base tax levels on the ability of people to pay them. However, normal poll taxes are an exception. Because their levels are not adjusted to suit abilities to pay, poll taxes tend to be regressive in nature. This means that the tax takes away a higher proportion of the wealth of poorer people and a lower proportion of the wealth of wealthier persons.

DISADVANTAGES OF DIRECT TAXES

1. They are politically unpopular, because they have immediate and direct effects on the pockets of those who pay them. Therefore, politicians who wish to be popular do not like levying them.

2. The points of collection are more numerous and, therefore, direct taxes are more costly to administer. They require that tax collection must be very efficient.

3. They use a great amount of record keeping on the part of those who pay these taxes and also on the part of the tax authorities. They can lead to a huge bureaucracy for their administration. Therefore, they are relatively very costly to administer.

4. Apart from poll taxes, they are difficult to impose and collect in countries, such as in Africa, where illiteracy rates are very high and most firms do not keep proper business and accounting records.

INDIRECT TAXES

A tax is *indirect,* if portions of the burden or incidence get passed on to be paid by others. Indirect taxes are found under conditions involving the sale of goods and services. The tax authorities collect these taxes from the sellers of the goods. These sellers then try to see how best they can share these taxes with the buyers of the affected goods and services.

Examples of indirect taxes include:

1. **Excise taxes:** These taxes are levied on only specific items and the most common types include:
   a. *Import or customs duties*: Often called *tariffs*, these are taxes on various items that are coming into the country from outside its borders. The importer pays all of the

taxes but later shares the incidence with buyers of the taxed items.

b. *Export taxes*: These taxes on goods and services being exported affect the prices of these items in the buying or importing country.

2. **Sales taxes:** These are levied as a flat percentage on the selling price of all or almost all items. The following are additional types of sales taxes:

   a. *Value Added Taxes (VAT)*: This is applied each time there is a sale from one processing firm that has created an input to the next and at each of the steps that follow, right up to when the item is finally sold to consumers. Let us take the example of a farmer who has produced some grain that he sells to a firm that mills it. The milling firm sells the flour to a bakery which bakes bread that is sold to retail outlets which, in their turn, sell the bread to the public. Between the production of the grain and the final product of bread reaching the public, each stage of the production process had its own contribution to the value of what it bought earlier but sold later.

   A VAT would apply to each stage and, therefore, the final price of bread would be higher than if the same level of tax was paid as a simple sales tax. An item that has more stages of value-added would therefore pile up a higher tax element than one that has fewer stages in the chain of individual firms that each add their respective share, to the value of the final product.

   b. *Turnover tax (TOT):* This is a type of sales tax that is levied at each stage an item changes hands from one sales point to another in the market. It does not matter, whether any value has been added or not at any of the intervening stages.

3. **Through inflation or the expansion of bank credits:** There are many reasons for inflation in a country. Inflation is caused when the supply of money is increasing at a rate that is faster than the increase in national output. There is an increasing volume of money chasing after relatively fewer volumes of goods and services. The two most important sources that cause inflation in a modern economy are:

   a. When the government spends money it has borrowed, especially from the central bank,
   b. When commercial banks increase loans to their customers who spend them.

   In both cases, there is increased demand, respectively by the government and bank customers, for goods and services whose volume is not increasing fast enough. Hence part of the higher prices is an indirect tax on the public, imposed respectively by the government and bank customers.

   People with fixed incomes find that their incomes will buy decreasing quantities of goods and services. This reduction in the purchasing power of money is a tax that finances the government or the profits of the commercial banks. Therefore, ***inflation is a tax levied by its source, without the knowledge and consent of the people.***

ADVANTAGES OF INDIRECT TAXES

1. Although they affect everybody in the population, they can quietly be levied and not cause too many political problems for the government. They are not easily noticed and their impact on the pockets of the population is more delayed than is the case with direct taxes. When people complain about higher prices, they are likely to put the blame on sellers, rather than on the government.

2. The points of collection are relatively fewer, e.g., at ports (for both imports and exports) and at factory level or point of production in the modern sector of developing economies. Therefore, the costs of administration are relatively lower than is the case with direct taxes.

3. They do not require high levels of literacy in the population or the keeping of complicated accounting and business records on the part of private citizens and retail firms.

DISADVANTAGES OF INDIRECT TAXES

1. Because they are politically easier to levy, they are likely to be over-used by a government. Thereby, they allow the government and its tax authorities to delay in using conscious and rational policies of tax reform and administration.

2. They tend to increase prices and, therefore, can contribute to inflation. This is more so with value-added and turn-over taxes where taxes pile up, as compared with simple sales taxes.

3. Import duties can lead to retaliation by other countries which feel that these taxes discriminate against their exports. Therefore, there is a high risk of beginning and sustaining trade wars that can hurt the exports of all the countries involved and lead to the destruction of international trade and political relations.

4. Value-added taxes (VATs) and turnover taxes (TOTs) have the following disadvantages:
   a. They require a great deal of record keeping and are therefore unsuitable and a waste of resources for the largely illiterate populations in poor African countries.
   b. They create incentives for business firms to integrate as many processes in production as is feasible. By cutting down in the number of intervening levels of production, existing turn-over taxes can be kept very low and profit margins made as high as is possible.
   c. This process hinders specialization in production, increases the concentration of businesses in a relatively few units and their monopolistic power or even cartel power within the economy.
   d. The present international economic order is that of increased globalization of finance, banking and business that is concentrating in the hands of a decreasing number of multinational corporations based in the countries of the

North. VATs and TOTs in developing countries help in concentrating economic power in the hands of firms that can integrate production processes as indicated above. This process of concentration makes it much easier for multinational firms in the wealthy countries to buy out and, therefore, to control the evolving monopolistic enterprises in the less economically developed countries of the South.

e. They are more regressive than ordinary sales taxes

5. Indirect taxes on goods and services that are consumed by all members of the population tend to take a higher proportion of the incomes of the relatively poor than they take from the incomes of those who are relatively wealthy. Because of this effect, these taxes are regressive by nature.

THE INCIDENCE AND EFFECTS OF TAXES

Governments get most of their revenues from taxes. Meanwhile, people tend to reduce the amount of human and non-human resources they use and, therefore, the output of activities that are taxed. High taxes encourage people to find ways of not paying them, through any of the following methods:

1. People can conceal information on the volume or extent of the activity to be taxed;

2. There are lawyers, accountants and tax officials who can advise on how people can legally get exemptions and other ways of reducing the taxes they should pay.

3. Under all conditions where taxes got to be very high:
   a. Many people are encouraged to move their activities into the informal sector. For example, to avoid import and export duties, people take to smuggling.
   b. Public officials charged with assessing and collecting taxes have made personal fortunes, through accepting bribes and then reducing the amount of taxes to be paid. For example, customs officials are bribed to reduce the amounts of import duties that are paid by importers.
   c. Under very exceptionally high taxes, people have stopped the activities or the consumption of the items being taxed.

4. Some citizens who are wealthy enough may either migrate or establish temporary residence and productive activities in countries with less taxes and better conditions of living.

5. Residents (some of whom are citizens and others are foreigners) will find ways of sending their money out of the country. This is called capital flight. It transfers wealth to other countries that have lower taxes on wealth or are safer for people to keep their money.

If taxes become too high, the government can earn less rather than more revenues. A famous international agency once advised the authorities of a West African country to impose a relatively very high specific tax on a particular popular beverage. As a result, its local consumption was drastically reduced. The business had to shut down, resulting in unemployment, loss of revenue for paying off the debts of the project and loss of tax revenues for the government.

The incidence and effects of taxes are very important economic issues. Indeed, the net benefits from any tax may often be difficult to assess in advance. Specific taxes, such as poll taxes and sales taxes that are paid by all individuals without any variation, mean that the relatively poorer persons in the population would be paying higher proportions of their incomes or of their wealth. These types of taxes are said to be regressive. A tax is progressive if it is structured to make relatively wealthier individuals pay higher proportions of their incomes or wealth, while the relatively less wealthy pay less. Some taxes can proportional, because the same proportion keeps being used, whether the money being taxed increases or decreases. Proportional taxes can be regressive, if they make poorer people pay higher proportions of their wealth than is the case with the wealthier members in the population.

The conditions related to taxes that may attract both local and foreign investors include:

1. The level of taxes;
2. Governments allow firms establishing themselves in certain activities or locations a period of years during which these firms pay no taxes. These periods of tax exemption are referred to as tax holidays or tax moratoriums.
3. Governments may also use the opposite of taxes, referred to as subsidies or negative taxes

When taxes are very high, they are likely to make it easier for many other countries to lure highly skilled people and businesspersons through having very low taxes or none, along with offers of various additional material incentives. Many countries have gained through this strategy and enabled them to speed their pace of economic growth and development at relatively low cost.

For many developing countries, some taxes can be very costly to administer for two reasons:

1. The very low extent of keeping adequate records is a persistent problem when:
   - Most of the population is illiterate, and
   - Most businesses are in the informal sector of these economies, unregistered, are informally organized and do not use modern methods of business management and financial accounting.

2. Government administrative systems, including those for tax collection, are generally exceedingly costly and inefficient. Indeed, people keep paying higher taxes to support a public sector that delivers decreasing benefits for improving the quality of life.

3. The administration of some taxes can cause very adverse long-term effects on the economic, social and political development of a country. Certain taxes have often caused riots and other forms of civil strife and disorder. As a result, governments have had to use costly measures of suppression.

Therefore, to arrive at an estimate of the net benefits of such taxes, we have to do the following:

(a) We must first estimate the costs of using tax collection officials, the army, police and other scarce resources for suppressing riots, repairing the damage, restoring law and order and building confidence between the government and the population.
(b) The costs stated above must then be subtracted from or compared with the total revenue collected through these taxes.

It can happen that the short-run and long-run cost of imposing some categories of taxes can be higher than the additional revenues the government is able to get.

OTHER SOURCES OF GOVERNMENT REVENUE

Apart from taxes, other ways in which governments get revenues include:

1. **Public enterprises:** Some governments set up public enterprises and other public institutions to produce various goods (e.g., water, pharmaceutical products) or services (e.g., banking, medical care, air travel, postal services). Many public enterprises have tended to rather depend on continuous financial help from the government, because they have been unable to generate enough income to cover their operating costs.

   Meanwhile, successful public enterprises contribute less funds to government revenue, if the results are compared with alternative situations in which the same items or services were produced by private firms. Obviously, this is a waste of resources that give the population less value for the money they pay in taxes and through other sacrifices.

2. **Royalties:** These are taxes paid for economic opportunities granted to any organization, such as mining rights on public lands.

3. **Court fines**: These are financial and non-financial penalties that are imposed by the courts on those who have been found guilty of infringing national laws.

4. **Licence fees:** They are paid for permits to undertake various economic activities that include driving, using vehicles on the highways, manufacturing explosives and several others.

5. **Lotteries:** Some governments use lotteries they have established to get substantial revenues from citizens and others who gamble. These games of chance are a form of taxation. They offer a choice for people to lose money and even get addicted to this process of losing their money, without complaining.

   The poor and ignorant suffer the most damaging effects of lotteries. Lotteries and similar games of chance eventually cause more serious social problems and related costs than the benefits the government claims to be getting.

6. **Borrowing:** Substantial amounts of funds come from the following channels:
   a. Governments borrowing from residents and institutions in the country. This is undertaken through the central bank selling government securities to the public or the central bank buying those that cannot be sold.
   b. Governments also borrow from abroad, through various channels with the highly misleading name of "foreign aid".

SUBSIDIES

A *subsidy*, sometimes called a negative tax, is an amount of any valuable resource (money, goods and services) that is made available to an individual or firm, with a view to lowering the cost of undertaking some activity by the recipient.

A subsidy is the portion of the cost that is paid by the government or the source that is making these benefits available. Where the resource or service is available free of any charges, the subsidy element is said to be 100 per cent (i.e., an outright gift or grant). Subsidies can be in the form of goods or services.

Some subsidies are given in indirect ways. A good example is "foreign aid" programmes which actually benefit the country giving the "aid" but destroy the economies of those receiving it. Through this deception, developing countries pay inflated prices for uncompetitive goods with very low or no local or international market prospects. Donors also include in their "aid" programmes instant "experts" who are mostly their unemployed or unemployable citizens with inferior opportunities at home but whom they can use at inflated costs in developing countries. The subsidies in these programmes are paid for by the developing countries that are receiving "foreign aid".

Governments use subsidies for lowering costs of production, such as when farmers pay less than it cost the government to supply them with seeds, planting material, fertilizer and other inputs. Subsidies can also be used to encourage the population to use certain facilities, such as educational institutions, medical facilities or agricultural extension services, either free or at charges that are lower than what they cost to provide.

All subsidies encourage the use or consumption of the affected resources. Because they emphasize the use or consumption of the goods or services affected, subsidies have many problems in their administration and, therefore, effectiveness in achieving the purposes for

which they were introduced. A list of these problems includes the following:

1. **Distortion in prices:** As we already know, prices are signals that cause human and nonhuman resources to be shifted within an economic system. They are very important pieces of information that help buyers and sellers in any market to decide on how to use their respective human and nonhuman resources for maximum benefit to themselves.

   Subsidies send the wrong signals to sellers and buyers because they do not reveal correct information about the opportunity costs of the resources being subsidized. As a result, they encourage inefficient use of the affected resources, as indicated below. Therefore, they interfere with normal market conditions for the production, sale and consumption of goods and services.

2. **Waste of resources:** Those who benefit directly from subsidies tend to be wasteful in the use of the subsidized items. The quantities of a subsidized input would be used up to a point where the benefit from the marginal doze of it would be equal to its cost to the user. Meanwhile, this way of using scarce resources would not be related to their respective opportunity costs within that economic system. Let us take an example of what can happen, when there is a 100 per cent subsidy on fertilizers:

   a. The farmers who are lucky or powerful enough to take whatever quantities they wish will use this free product so lavishly as to even leave excess amounts of it in the bush (i.e., up to a point where the marginal unit would then bring in zero private benefit).
   b. Users tend to be less innovative in trying to find better or more cost-saving ways of using this scarce resource, as compared with situations with no subsidies.

3. **High administrative costs:** Subsidies have higher opportunity costs in other uses. Their administration is often slow, circuitous, bureaucratic, cumbersome and wasteful of valuable human and nonhuman resources. Under these conditions, public officials and other people make private fortunes through:

   a. Corruption through bribes (i.e., voluntary payments) and extortion (i.e., involuntary payments) to encourage public officials to perform their official duties;
   b. Theft and the resale of the items at higher prices within the country or across its borders;
   c. Diversion of the items away from the stated purposes by those who collect their share and sell them to other persons. For example, a farmer would make immediate gains by selling the fertilizer rather than by using it in the more risky activity of farming.

4. **Temporary subsidies tend to be permanent:** Subsidies are usually meant to be temporary for solving specific problems. However, they often persist and become permanent. Eventually, their removal brings violent riots, public disturbances and other forms of protest by persons who benefit from them and are therefore opposed to their reduction or removal. Many countries in Africa and elsewhere (including the industrial countries) have had riots which arose from opposition to the reduction or removal of

some existing subsidies.

5. **Inevitable expansion in volume of subsidies**: As the population or numbers of those enjoying the subsidy increase, the cost of administering the subsidy also grows. The government increasingly finds it difficult to have enough financial and other resources for administering the subsidy. That is why subsidies eventually lead to financial crises for governments or those bearing the cost of providing them.

6. **Encourage procrastination by the government**: Most subsidies offer only temporary but not permanent solutions to the problems that are supposed to be solved. Meanwhile, as long as conditions remain manageable, governments tend to postpone more realistic policies and programmes that would eventually remove existing subsidies, without simultaneously causing much economic and social disruption.

EXAM PREPARATION

MULTIPLE CHOICE QUESTIONS

1. Which of the following forms of taxation is most regressive?
   (a) a progressive income tax
   (b) a proportional income tax
   (c) motor vehicle tax
   (d) tobacco tax.

2. Which one of the following taxes is most likely to affect the supply of labour?
   (a) income tax
   (b) a tax on corporate profits
   (c) death duties
   (d) an increase in employers' National Insurance contributions.

3. The term 'Marginal Rate of Tax' is applied to the:
   (a) proportion of income which is paid in tax
   (b) amount of tax payable after allowances have been deducted
   (c) rate of tax paid on unearned income
   (d) tax paid out of an increment to income
   (e) rate of tax which gives the highest yield.

DISCUSSION QUESTIONS

1. Which are the most important methods a government uses to interact with the population?
2. What is a tax? Do taxes necessarily have to be in terms of money or cash?
3. Give and explain five reasons why governments tax their populations? Can governments tax people who are not their citizens?
4. "Since all taxation transfers income from the population to the state, it does not matter very much, if this transfer is through direct taxes on incomes, or indirectly by taxes on various goods and services." Discuss.
5. What is meant by the incidence of a tax? If this incidence is very high, what action is often taken by those who are affected?
6. The governments of many developing countries have problems with levying and collecting taxes. Discuss and show what these problems are.
7. What are the principal sources of government revenue in your country and what is their respective importance in the economy of your country?

CHAPTER THREE

ECONOMIC INDICATORS: UNEMPLOYMENT AND INFLATION

INTRODUCTION

Sometimes the overall business climate is buoyant -few workers are unemployed, businesses are expanding, and not many firms are going bust. At other times, however, the business situation is not so good - there are many unemployed workers, businesses are cutting back in their production, and a significant number of firms are going out of business. These ups and downs in economy-wide economic activity can be called **business fluctuations** or **business cycles.**

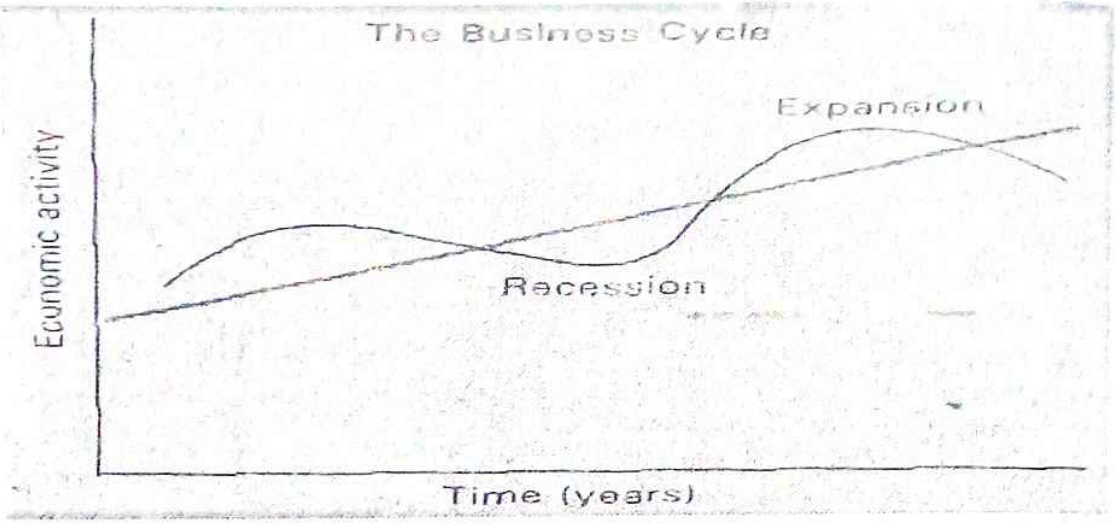
Business Cycles

During certain years the economy is growing - output, income, and employment are increasing. In other words, the trend in business and general economic activity is upward. But there are fluctuations around what we might call the 'growth-path' line. We have terms for the periods when business activity temporarily pulls us below our upward growth-path, and others for periods when business activity moves with, or in excess of, our normal growth-path. We call the former **recessions** or **depression** and the latter expansions or booms.

Think of this in terms of a growing child. The child is on a long-term growth trend in regard to body weight and height. There are however, temporary fluctuations. The child can become sick or can experience malnutrition and deviate from the long-term trend towards maturity. This would be the equivalent of a recession in the economy. When the child experiences growth spurts this would be equivalent to an expansion in the economy.

Figure 3.1

The Business Cycle: The straight line depicts the long-term 'growth-path' around which the economic activity fluctuates - moving in some, consistent pattern from expansion to recession and back again.



Economists have long recognized that left on its own devices, an economy has a built-in cyclical pattern of its own. There are many explanations for this cycle of which the following is only one. Boom situations lead to circumstances of 'over-heating' characterized by 'shortages' of labour, capital, and stock and a consequent rising of prices. This leads into a recession characterized by falling output, and profits, rising unemployment and stocks, and a stabilizing of prices. This eventually generates a potential upswing situation to another boom.

When we talk about these fluctuations or cyclical patterns in economic activity we are suggesting that many **economic indicators** or variables are moving at once. For example: prices, employment, money supply, stocks, return on capital, savings, interest rates, balance of payments, output, exchange rates etc. These indicators are measured and presented in many ways.

Of these various indicators, changes in unemployment and inflation are important aspects affecting most of the other variables in one way or another. They affect many aspects of the economy and are affected by many other economic variables including each other.

Key Points 3.1

- Various economic indicators are measurable and can be analysed.
- The total economic activity that the indicators represent exhibit periodic fluctuations - these have been labelled recessions or depressions, and expansions or booms.
- The cyclical behaviour of the indicators leads to stabilization policies being employed and forecasts of future trends being identified

UNEMPLOYMENT

One of the major consequences of fluctuating business activity is the ensuing unemployment, particularly of workers, but also of other factors of production (non-human resources). Unemployment has many costs - in human suffering, in loss of dignity, in loss of output and savings - the list goes on and on. Unemployment is considered to be a social evil that must be kept at an 'acceptable' level.

The rate of unemployment is measured by dividing the total number of persons defined as unemployed by the total number of persons defined as being within the workforce.

Determining who is truly unemployed and who is effectively in the labour force is no easy task.

How Unemployment Is Measured:

Definition:

(i) Persons who are employed for pay are defined as employed.
(ii) Persons who are not employed for pay but are able to work and actively seeking work or awaiting recall from lay offs are defined as unemployed.
(iii) Persons who are not employed for pay because of inability to work or are not actively seeking work are defined as not in the labour force,
(iv) The labour force is the sum of total employment and total unemployment,
(v) The unemployment rate is the percentage of the labour force that is unemployed.

$$\textbf{i.e. Unemployment rate} = \frac{\text{Total Unemployment} \times 100\%}{\text{Labour force}}$$

Persons who are disabled, have full time home responsibilities or not able to work or seek work for any number of other reasons are not in the labour force, and therefore do not enter in the calculation of the unemployment rate.

The Major Types of Unemployment

Unemployment is usually categorized into four basic types: frictional, cyclical, seasonal, and structural. Experts keep on identifying several other categories. You may hear about these different types of unemployment, so you might want to know what they mean.

1. Frictional Unemployment

Frictional unemployment results from the time-lag involved in the move from one job to another. Some persons are unemployed because they are "between jobs" or temporarily unemployed. Some workers move from low-paid jobs to high-paid jobs. Workers who are dissatisfied with their jobs quit to seek other employment, and these workers are unemployed until they are employed on new jobs. These are examples of frictional unemployment. What we call frictional unemployment is this continuous flow of individuals

from job to job in and out of employment.

Frictional unemployment can be explained by imperfections, or friction in the labour market. Specific causes of frictional unemployment include:

(i) geographic or occupational immobility of labour,
(ii) the time necessary to find new employment,
(iii) the time required to acquire new skills;
(iv) inadequate market information.

Because of these frictions, people do not move instantly from one job to another, and during the time between jobs they are frictionally unemployed. Frictional unemployment used to be called **'transitional unemployment'** which as the name suggests merely involves people moving or changing from one job to another. The modern phrase places the emphasis on 'time taken' to change as a result of certain frictions in the labour market.

Frictional unemployment is directly related to the **geographical and occupational immobility of labour.** Factors such as the lack of information or the required skill, and the cost of moving, can prevent a worker from filling a job vacancy. Consequently the number of unfilled vacancies can be used as a measure of frictional unemployment.

Indeed, there will always be some frictional unemployment as resources need time to be redirected within the market. To eliminate frictional unemployment completely, we would have to prevent workers from leaving their present jobs until they had already lined up other jobs at which they would start working immediately. A complete elimination of frictional unemployment would probably reduce the rate of growth of our economy. One important source of advances in productivity is the movement of workers from sectors of the economy where labour productivity and wages are low, to sectors where productivity and wages are high. The search for better job-offers is the process by which workers discover areas where their productivity is highest, that is, where they can make the most income. Frictional unemployment can, therefore, be reduced by the provision of better information services but it could never be eliminated altogether

2. Cyclical Unemployment

Cyclical unemployment is related to the business cycle. In fact, cyclical unemployment is defined as unemployment associated with changes in business conditions - primarily recessions and depressions. Economists generally agree that some unemployment may be caused by lack of demand in the downswing of the business cycle, but Keynes went further. He argued that the economy could settle into an underemployment equilibrium caused by a continuing lack of-effective aggregate demand

Also called *demand-deficient unemployment* or *Keynesian unemployment*, cyclical unemployment is the type of unemployment identified by Keynes as the cause of persistent mass unemployment between the wars.

The way to lessen cyclical unemployment would be to reduce the intensity, duration, and frequency of ups and downs of business activity. Economic policy-makers attempt, through their policies, to reduce cyclical unemployment by keeping business activity on an even keel.

3. Seasonal Unemployment

Seasonal unemployment is just that. It comes and goes with seasons of the year in which the demand for particular jobs rises and falls. For example, construction workers often can work only during the warmer months. They are seasonally unemployed during the winter. Resort workers usually can only get jobs in resorts during the summer season. They, too, become seasonally unemployed during the winter; the opposite is true for ski-resort workers.

There is little we can do to reduce seasonal unemployment.

4. Structural Unemployment

Structural unemployment arises when a firm or industry suffers a structural decline, having become uncompetitive in the face of either changing costs and technology or changing demand.

- Some unemployed workers do not have the skills and training necessary to fill the jobs that are in demand. For example, unemployed teenagers and persons with less than senior secondary school education will not be hired to fill vacancies for computer technicians, tool and dye-makers, accountants, or other jobs that require substantial education and training.
- Others with highly specialized skills are unemployed because technological change or shifting demand has eliminated the need for these skills.

These are examples of structural unemployment. Structural unemployment is, therefore, the result of basic differences between the **characteristics of unemployed workers** and the **characteristic of the jobs in demand**.

Presumably, there have been structural changes in our economy that have caused some workers to become permanently unemployed, or at least unemployed for very long periods of time, because they cannot find jobs that use their particular skills. Structurally unemployed persons are usually those who simply cannot find any job they can do. Structural unemployment has often been associated with **technological unemployment**, that is, unemployment resulting from the increased use of labour-saving machines.

Unlike cyclical unemployment, structural unemployment is not caused by the business cycle, although the business cycle may affect it. And unlike frictional unemployment, structural unemployment is not related to the movement of workers from low-paid to high-paid jobs. Rather, structural unemployment results when the consuming public no longer wants to buy an individual's services in that location. Instead of going through retraining,

that individual persists in his or her search for employment with 'obsolete' skills in a market with limited demand. Some of these people eventually will go into new industries. In most urban settings this is precisely what happens. However, in some settings this does not happen. Often people refuse to move. They wait for times to improve. The result is a permanent depression in some geographic areas due to labour immobility.

In fact in some instances structural unemployment is very closely related to **regional unemployment** too. When an industry concentrated in one area declines as a result of changes in the pattern of demand the whole area becomes full of workers with nothing to do.

Apart from the four major types of unemployment discussed above, the following are also often identified:

5. Casual Unemployment

Casual unemployment which is a special case of frictional unemployment, occurs when labour is employed on a short-term basis in trades such as tourism, catering, building and agriculture. When casual unemployment results from regular fluctuations in demand or weather conditions, it can be called **seasonal unemployment**.

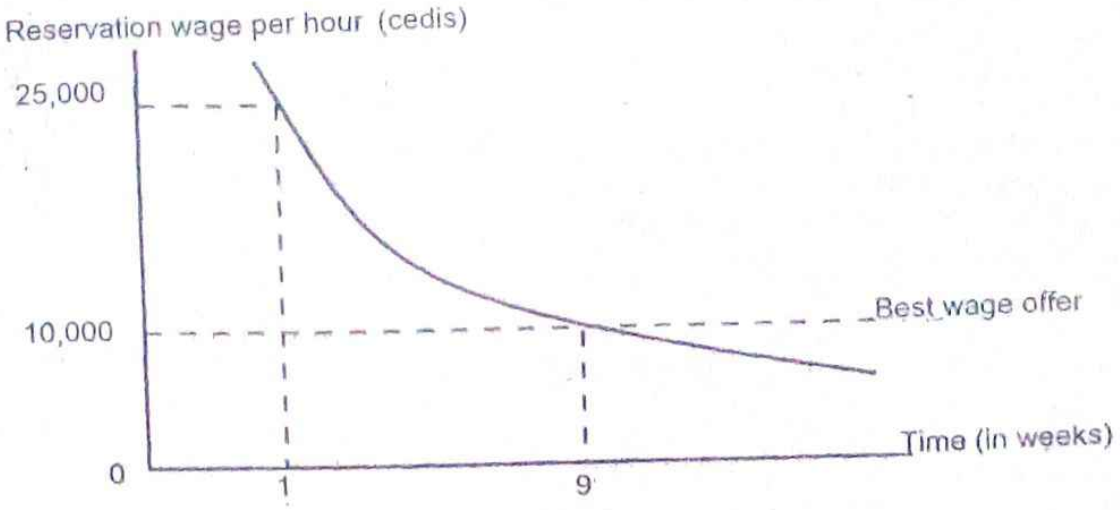
6. Job Search Unemployment

Just because workers are unemployed does not mean they will necessarily take the first job they find. Most workers have a **reservation wage** or a minimum acceptable wage. Jobs that offer wages below a worker's reservation wage will be rejected and the worker will search for work until he finds a job that offers a wage equal to or greater than the reservation wage. As long as the job search continues, a worker is considered unemployed.

Job search unemployment is due to unemployed workers' choosing to continue their job searches until their reservation wage is met. As long as the worker expects a wage offer equal to or greater than the reservation wage to turn up through continued searching, he or she will choose to continue to search rather than accept offer below the reservation wage. However, as the number of weeks of unemployment and job search increases, the worker tends to lower the reservation wage.

The inverse relationship between the weeks of unemployment and the worker's reservation wage is shown graphically in Figure 3.2 below.

Figure 3.2 Time and Reservation Wage



At the end of week 1, the worker's reservation wage is ¢25000 per hour. This is the wage that would be necessary to get the worker to stop searching and accept employment. If a week of searching turns up a best wage offer of ¢10000, the worker will not accept it because he or she expects to find a better wage offer by further searching. However, as further searching fails to turn up a ¢25000 wage offer, the worker lowers his or her reservation wage. If after nine weeks of unemployment and searching, the best wage offer is still ¢10000 per hour, the worker will accept the offer because the reservation price has fallen to ¢10000.

7. Residual Unemployment

Residual unemployment covers any other cause of unemployment. It includes the **work-shy** (not to be confused with **voluntary** unemployment in the sense used by Keynesians and monetarists) and the **unemployable**. It is now recognized that **long-term unemployment** in itself may cause a worker to become unemployable, as a result of both the erosion of job skills and work habits, and of the employer's perception that a worker with more recent job experience is a 'better bet'.

We should also mention **hidden unemployment**, which strictly is not unemployment at all but a measure of **overmanning**. Hidden unemployment occurs when firms could produce the same output with fewer workers. It can be caused by trade union pressure and restrictive practices, the high costs of making workers redundant, or by the desire of firms to hang on to skilled workers in a recession in the belief that the workers will be needed when demand picks up.

The Problem with Unemployment Rate Estimates.

There are tendencies for estimates of unemployment rate figures to either overstate or understate the true value.

For instance the overall unemployment rate overstates the seriousness of unemployment because some unemployment is self-imposed (for example, choosing to continue job search rather than accept employment at the best current wage offer), and because most persons are unemployed for short rather than long periods of time.

However, the unemployment rate also understates some other serious dimensions of the problem of unemployment. The unemployment rate for the total labour force is a convenient summary indicator of macroeconomic performance, but it does not tell us much about the employment status or the severity of unemployment for specific subgroups in the labour force.

In some cases, when unemployment rates have remained unusually high for long periods of time, many unemployed workers become discouraged and stop looking for employment. These **discouraged workers** are officially defined as not in the labour force, even though they would be able to work and would be likely to seek employment if they were more optimistic about their prospects.

There is also the problem of Underemployment. Persons who are employed for pay are counted as employed whether or not they are fully employed. There are two basic types of underemployment of labour:

- Some workers are underemployed because they are unable to find employment that utilizes their training, skills and talents fully. Many Engineering graduates have been unable to find suitable employment in firms because of the shrinking job opportunities. A degree holder in Chemical Engineering who has to settle for a full-time job teaching Mathematics in a Secondary School is employed, but underemployed.
- Part-time employment is another form of underemployment, Persons who are unable to find full-time employment may have to settle for part-time or casual employment.

From Unemployment Types to Policy

By categorizing unemployment in the ways above, solutions to the various problems become easier to discern. It is clear that the most serious forms of unemployment are those due to a general decline in demand - namely cyclical unemployment. The way to lessen cyclical unemployment would be to reduce the intensity, duration, and frequency of ups and downs of business activity. Economic policy-makers need to apply effective policies to moderate this cycle since the way to reduce cyclical unemployment is to keep business activity very much alive at all times.

Economists identify certain structural rigidities which are the obstacles that hinder the efficiency of many markets. Examples of such rigidities include: excessive taxes, an

insufficient supply of trained labour, subsidies, wages that are above the equilibrium level due to union activity, minimum-wage legislation, and excessive social security payments.

Industrial policy has to shift from emphasizing intervention and a related **'culture of dependency'** to the freeing of market forces and policies promoting **an enterprise culture**. An enterprise culture is dependent on profit, freedom, competitiveness, liberalization, deregulation, incentives, ownership, and decentralization.

More specifically, structural, technological, or regional unemployment are often due to the decline in demand for a specific skill or product. These can be remedied in various ways by attempting to improve regional and occupational mobility.

There is the need for an effective **Regional Policy** to basically identify certain depressed areas as being in need of incentives to promote industrial diversification. A localized industry is one that dominates a whole geographical area, that is, few alternative industries exist in the locality. When a localized industry declines, therefore, so does the regional economy of a whole area. In consequence, the areas designated as areas for assistance also tend to have higher levels of unemployment than the national average.

Furthermore, people tend to stay where they have their social roots. As economists would express it people tend to be **geographically immobile**. Put simply ***'Of all baggage human baggage is the most difficult to move'***. Consequently the idea of moving work to people becomes an attractive possibility. Regional policy therefore has to offer a range of incentives to encourage firms to develop in certain areas where unemployment problem is so acute. Certain areas could actually offer firms financial assistance to entice them to develop within their locality.

There is also the need to develop an effective **Training Policy.** Not only is labour geographically immobile, but it is also said to be **occupationally immobile**. That is, people find it difficult to transfer from one job area to another. Yet this is necessary in a dynamic economy. Problems of unemployment tend to coexist alongside large numbers of job vacancies. This seemingly odd situation is largely due to the unemployed having the wrong skills and partly due to them lacking information. It was these problems of mismatch between vacancies and unemployed labour that largely provided the impetus for training-type policies in advanced economies like the UK.

Training policies are basically geared towards overcoming mismatch problems between unemployed labour and job vacancies. The aim is to reduce skill shortages and make labour more mobile. In particular, the following objectives can be identified with comprehensive training policies:

- to encourage employers to develop the skills and experience of their employees of all ages;
- to provide and encourage appropriate training for young people when they have full-time education;
- to help the long-term unemployed acquire the skills and experience that will help

them find regular employment;

- to help the education system become more relevant to working life and more responsive to changing demands and opportunities in the labour market;
- to ensure that the distinctive needs of the self-employed and small firms for training, counselling, and other support are met.

A Training Agency can be established within the Department of Employment which, on behalf of the nation, must co-ordinate the activities of employers, the education service, training providers, and trade unions in an effort to overcome skill shortages and thereby reduce unemployment.

Finally, the recognition that frictional and seasonal unemployment exists alters the government's perception of what level of full employment to expect. For example, no government policy would ever aim at 100 per cent of the workforce being employed.

Full employment does not mean that everybody is employed. It is obvious that in any dynamic economy some unemployment is unavoidable. The question is: what level of unemployment is unavoidable and at what level does it become a problem?

According to Lord Beveridge's influential work Full Employment in a free Society (published 1944), an unemployment rate of 3 per cent would be compatible with the aims of full employment. His figure allows 1 per cent for frictional unemployment, 1 per cent for seasonal unemployment, and 1 per cent for overseas factors. Beveridge's target was effectively adhered to during the post-war period in the UK until 1971.

However, other formulas of what constitutes full employment are also possible. For example, during the same period of time as UK governments were adhering to Beveridge's criteria, the US employed a different formula. For them post-war full employment represented 96 per cent employment. Their 4 per cent unemployment was to account for frictional unemployment and the various forms of structural unemployment. Yet they, too, have been way off target since 1970.

This raises the question: what does full employment in the 2000s represent? Clearly the variables have changed. Technology has improved; more people have entered into the search for work; unemployment benefits in advanced welfare economies have increased; and so on.

As a practical goal, full employment with stable prices is unrealistic. Employment goals tend to be defined in terms of measured unemployment rates that we accept as full employment. There is no single, unambiguous analytical standard for defining a single rate of unemployment as 'the full employment' standard.

Economists themselves seem to have become disinterested in this isolated target for employment, and they are presently placing more emphasis on the concept of **a natural rate of unemployment**. This is a constantly moving rate which relates the preferable level of unemployment to that which is compatible with constant prices. It is based on the principle that every market, including labour, has an equilibrium rate. Most economists set a

employment goal by defining full employment as the lowest measure of unemployment rate that can be sustained without excess inflation.

The Costs of Unemployment

The most obvious economic and human costs of unemployment fall on the unemployed. Although some unemployed workers receive unemployment compensation from the Social Security Scheme and some receive additional help from friends and relatives, few receive sufficient income to maintain the same living standard they could with full-time employment. The widespread notion that most unemployed workers receive as much or more income while unemployed than they earned from working especially in the United States of America and in Britain simply is not an accurate picture of the impact of unemployment on most workers' income and living standard. Poverty is a consequence of unemployment for many workers.

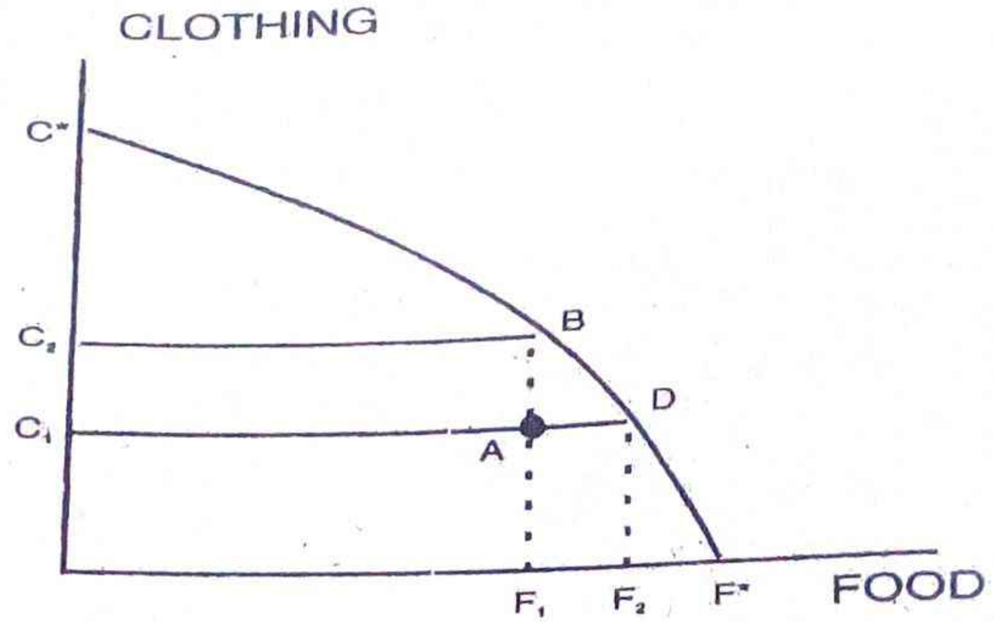
Unemployment imposes severe costs on the community. Persons who are unemployed as a result of lay offs, dismissals and quits and are unable to find other employment, suffer losses of income. Entrants and re-entrants into the labour force who are unable to find employment are unable to earn income.

Unemployment also exacts a high human toll on the unemployed. Studies by psychologists, sociologist and medical researchers show higher incidence of alcoholism, depression and other psychological problems, spouse and child abuse, and even suicide among the unemployed than for the population as a whole. Crimes against property (burglary, robbery, theft), and against persons (assault and homicide) tend to be more common in areas of the country experiencing long periods of high unemployment than for the country as a whole. Groups that suffer chronically high unemployment show higher incidence of mental disorders and physical illness than the general population. Social instability and tensions are common in urban areas where high unemployment rates are the norm.

The costs of unemployment are not confined to the unemployed, however. The community as a whole also loses economically when workers are unemployed - even when that unemployment does not mean economic desperation for the unemployed workers themselves. That is, an unemployed worker, regardless of economic need, represents an unemployed resource, and the community loses benefit of the goods that he or she could have produced if employed. With unemployed labour and other resources, society loses the benefit from the additional goods and services that could have been produced in a fully-employed economy.

Unemployed resources result in the economy producing inside its production possibilities curve as indicated by point A in Figure 3.3 below.

Figure 3.3 Unemployment and output of goods



If the unemployed resources were employed, it is possible to produce more of at least one good without reducing the outputs of other goods. For example, in Figure 3.3, it is possible to produce more of one good without reducing output of the other good by moving to point B or point D on the production possibilities curve, or more of both goods by moving from point A to any of the points between B and D on the curve. Unemployment results in a level of aggregate output or real GNP which is less than the economy's potential aggregate output or potential GNP.

The GNP gap shows one of the costs of unemployment to the community. It refers to the loss of goods and services that would have been produced if the economy were at full employment. This can be explained as follows:

- Potential GNP is the estimated real GNP (in constant Prices) that would be produced with low unemployment rates and high rates of Utilization of capacity.
- Potential GNP is not stable overtime, but grows as a result of several economic forces. As population and the labour force grow, the capacity to produce expands due to the additional labour resources. Potential GNP also grows as a result of innovations, technological change and other forces that increase the productivity of labour and other resources.
- The GNP gap is the difference between potential GNP and actual GNP, i.e. **GNP gap = Potential GNP - Actual GNP.**

As unemployment increases, so does the GNP gap and greater is the loss of goods and services that would have been produced if the economy were at full employment.

Key Points 3.1

- There are many types of unemployment including frictional, cyclical, seasonal, structural, technological, and regional.
- Frictional unemployment occurs because workers do not have all the information necessary about vacancies nor do employers know about all of the qualified workers to fill those vacancies. Consequently, 'job search' time must be allowed for when people wish to change jobs.
- Structural unemployment occurs when the demand for a commodity permanently decreases so that workers in an industry are permanently barred from the job they are used to doing.
- The level of frictional, seasonal, and/or structural unemployment can be used to arrive at an (arbitrary) definition of full employment.
- The various types of unemployment need to be identified in order to consider policy options.

The Major Schools of Economic Thought on Unemployment

1. The Pre-Keynesian view

The neo-classical economists who preceded Keynes (and whom Keynes rather confusingly labelled as 'classical') regarded the level of employment as being determined by the **'real forces'** of supply and demand in one large competitive **labour market**, **whilst the quantity of money** determined the price level. They accepted that there would always be a certain amount of frictional and structural unemployment but believed that, provided that real and money wages were flexible, in a competitive economy **market forces** would always tend to bring about a long-run equilibrium at a minimum level of unemployment – which , in recent years, monetarists have labelled as the **natural rate of unemployment.**

The neo-classical theory of aggregate employment originates in the micro-economic theory of the diminishing marginal productivity of labour. In **competitive labour markets** a firm's equilibrium employment of labour is determined where the marginal product of labour equals the real wage. In conditions of **diminishing marginal returns**, firms will only employ additional workers **voluntarily** if there is a fall in the real wage. If markets are sufficiently competitive, the **excess supply** of labour will cause the real wage to fall until unemployment is eliminated. The pre-Keynesians explained persistent mass unemployment in terms of uncompetitive forces such as trade unions which prevent wages from falling. In this sense they viewed such unemployment as essentially **voluntary**. The work-force as a whole is to blame for the unemployment of some of its members, not because they are **work-shy**, but because of the refusal of those workers in employment to accept lower real wages.

For the neo-classicals, the determination of the **price-level** was completely separate from the determination of the level of employment. While the 'real forces' of supply and demand determine **levels of output and employment** and the equilibrium values of **relative** prices, **monetary forces** determine the **price level** (via the **quantity theory of money**). Thus if the quantity of money doubles, relative prices and levels of output and employment remain the same, but all prices double.

2. The Keynesian view

Keynesians reject the older view that 'real' and 'monetary' forces are separate. Money provides a vital linkage between the markets of the real economy, and when this linkage breaks down, unemployment can result. Keynesians place great emphasis on the **store of value** function of money, arguing that **demand-deficient unemployment** can result when money incomes are stored in idle holdings of money rather than spent. In contrast the pre-Keynesians had never seriously entertained the possibility of such a **lack of aggregate effective demand**, accepting instead **Say's Law** that 'supply creates its own demand'. Keynes actually reversed Say's Law: instead of 'supply creating its own demand', Keynesian theory is based on the idea that 'demand creates its own supply'.

Keynes also claimed that the neo-classical theory of employment is guilty of the **fallacy of composition**. What is true for a single firm or market is not necessarily true for the economy taken as a whole. If the **money wage** paid by **one** firm falls, it will indeed be prepared to employ more workers, but if all money wages fall by the same proportion it does not follow that, collectively, **all** employers will employ more labour. Consider two possibilities. In the first place, prices of goods may fall as much as money wages. If all money wages and prices fall by the same proportion, the **real wage** will remain the same. Secondly, if prices fall by less than the money wage, the real wage will indeed fall, but a general fall in real incomes may reduce aggregate demand. If unemployment is already being caused by too little demand, a wage-cut policy may cut demand still further. Keynes argued that, far from curing mass unemployment, a wage-cut policy could make matters worse!

Keynes also rejected the **quantity theory of money**, the cornerstone of the pre-Keynesian (and the monetarist) theory of inflation. The Keynesians reject this theory. Keynes adapted his theory of mass unemployment caused by **deflation** and **deficient demand** to the conditions of **inflation** and **excess demand** in the fully employed economy of World War II.

3. The Monetarist view

In many ways monetarism, or the **'New Classical Macro-economics'** as some versions of monetarism are now known, is simply a revival of the old pre-Keynesian economics. Keynes had written the General Theory in order to construct what he thought was a better and more general explanation than that provided by neo-classical theory of the outstanding problem on the agenda in his day: deflation or mass unemployment. Keynesian economics 'ruled' as long

s its policy prescriptions ensured relative full employment, growth and price stability, lthough monetarist critics of Keynesianism now argue that full employment was **coincidental with**, and not **caused by**, Keynesian economic management. When, from the late 1960s onward, there was a simultaneous failure to achieve these objectives in the British economy, Keynesianism became vulnerable to attack from, amongst others, a revival of the 'old economics'. Monetarism essentially accepts the old '**Classical Dichotomy**' that the **real and monetary economy are separate;** the real forces of supply and demand determine 'real things'-output, employment and relative prices - whilst money, a veil behind which the real economy operates, determines 'money things' - the overall price level. Thus, growing unemployment is explained by monetarists largely in terms of workers **voluntarily** pricing themselves out of jobs, whilst, via a revival of the old quantity theory of money, irresponsible governments creating too much money are blamed for inflation.

The Underlying Concept

The most important distinction to be made between types of unemployment is between the concepts of **voluntary** and **involuntary unemployment**. According to both the pre-Keynesians and latter-day monetarists, persistent mass unemployment is **voluntary**, explained by workers **choosing** higher real wages and fewer jobs. In contrast, Keynesians explain a part at least of mass unemployment in terms of **demand deficiency** outside the control of workers. In this sense, such unemployment is **involuntary**.

INFLATION

Inflation is one of the most serious and universal economic problems. The persistent increase in most prices has affected all of us. **Rising prices** now seem as **inevitable** as death and **taxes**. In the remainder of this chapter, we will examine what inflation is, how it is measured, and how it affects each of us in our simultaneous roles as consumers, tax-paying citizens, and income-earners.

Definition

At the outset, we must have a precise definition of the phenomenon called inflation. We will technically define it as ***a situation in which there is a sustained rise in a weighted average of all prices.***

An alternative definition would ***be a relatively persistent general increase in prices.***

Notice the emphasis on the words **sustained** and **persistent** in our definitions. A one-time increase in the (weighted) average of all prices is not, under these definitions, an inflationary phenomenon. Rather, it is just a one-off event. When the (weighted) average of all prices is rising year in and year out as it has in Ghana in over the years, that is definitely inflation.

Official measurements of inflation use a technique which involves buying the same 'basket' of goods and services each month, thereby enabling them to assess the purchasing power of money. In recent years to physically buy the goods (which they do not do - they merely get 'price quotations') would have required more and more money, as inflation has become a marked problem.

Types and Causes of Inflation

There are many different explanations for inflation. It is now customary to classify inflation as being either **demand-pull** or **cost-push**. Here we will hypothesize that inflation occurs either because an increase in total demand pulls up prices ('demand-pull' inflation) or because an increase in the cost of production pushes up the prices of final products ('cost-push' inflation).

Demand-pull Inflation

When total demand in the economy is rising while the available output of goods is limited, demand-pull inflation occurs. Goods and services may be in 'short' supply either because the economy is being fully utilized or because the economy cannot grow fast enough to meet the increasing level of demand. As a result of either, the general level of prices rises. This type of inflation is often experienced as an economy approaches and reaches its full-employment level.

Consider the following possibility: total demand rises and the economy gets closer and closer to full capacity output; in fact some firms may well reach full capacity (but not all). Any further increases in demand, especially if experienced by the firms that have reached full capacity, will cause them to raise prices. Moreover, if these firms supply intermediate goods to other firms, then the increased price of these intermediate goods means that the cost of production rises for the firms using those intermediate goods. Thus, increases in demand tend to pull up prices, and hence the term demand-pull inflation.

Demand inflation may be defined as a situation where demand persistently exceeds supply at current prices so that prices are being 'pulled upwards' by the continuous upward shift of the demand function.

We are now dealing with the economy as a whole and so any rise in the general price level means a corresponding rise in money incomes. Higher prices generate increased purchasing power and it is this which makes inflation a continuing process.

It must be noted that demand-pull inflation is usually associated with conditions of full employment where increases in aggregate demand cannot be matched by corresponding increases in supply. There are several ways in which **excess demand** may arise under **full employment conditions.**

1. There may be an increase in government expenditure not matched by a corresponding increase in taxation. If the deficit is financed by borrowing from the banks it means that the additional expenditure is being financed by an increase in the money supply.
2. Autonomous investment might increase when there is no corresponding increase in current savings. The additional funds may be obtained from past savings. If there is no corresponding increase in taxation there will be excess demand and an upward pressure on prices.
3. Excess demand may also arise from an increasing surplus on the balance of payments. Exports, remember, are inflationary since they generate income at home, but remove a corresponding value of output from the home market. If an export surplus is not balanced by increased taxation or savings, domestic expenditure will be greater than the value of domestic supplies at current prices.
4. A diversion of resources to the production of military equipment, or increased capital formation (possibly due to attempts to increase the rate of growth) may also result in inflationary pressures. Incomes will not fall, but the supply of consumer goods and services is reduced. There will need to be increased savings or taxation in order to remove the excess money demand.
5. Major inflations have often occurred during immediate post-war periods. During a war people are encouraged to save in order to reduce inflationary pressures and to help finance the war. Once hostilities cease there is a strong desire to return to 'normal' patterns of consumption. There will be a strong desire to spend, backed up by a massive ability to spend, since current incomes will be supplemented by a large accumulation of past savings. But supply will be inadequate to meet this demand at current prices since a major part of post-war output will be required for reconstruction and capital replacement.

Once the inflationary pressures have begun, they set up expectations of further price increases. Money will become less attractive as an asset and people will prefer to hold commodities, property, and company shares. Prices will tend to rise even faster as the velocity of circulation increases.

Will inflation peter out?

Inflation could, theoretically, continue indefinitely if, every time factor incomes increase, aggregate money demand increased in the same proportion. This would mean that real demand remains unchanged but the excess money demand would not be eliminated.

However, for certain reasons the argument holds that monetary demand would be increasing at a slower rate than prices and ***an equilibrium position*** will be ***reached*** eventually. Some of the reasons that suggest that this latter development is a possibility include the following:

(a) The propensity to consume may fall as money incomes increase so that C increases at a slower rate than Y. A progressive system of income tax would be another reason for a slowing down in the rate of growth of money demand.

(b) Some groups may not receive increases in money income which fully compensate for the rise in prices. Although money incomes rise by the full extent of the price increases, income is redistributed and the overall propensity to spend may fall. If this is so, aggregate money demand will not rise by the same amount.

(c) Rising prices at home will tend to reduce the volume of exports and increase the volume of imports. A fall in exports and an increase in imports will tend to reduce the growth of aggregate demand.

(d) As prices rise and money incomes increase, so will the transactions demand for money. This will shift the liquidity preference curve to the right and, assuming no change in the money supply, the rate of interest will increase. If it is sensitive to changes in the rate of interest, investment will fall and so will aggregate demand, or the rate of increase will diminish.

Although it is possible for the inflationary process to work itself out to a new equilibrium, recent experience demonstrates that this will only be achieved after very large, and politically unacceptable, increases in prices. It seems inevitable that official action will be required to deal with the inflationary problem.

Cost-push Inflation

The demand-pull theory of inflation indicates that prices will go on rising as long as there is excess demand to pull them upwards. Rising prices may be sustained, however, by pressures which push them upwards rather than pull them upwards. The cost-push inflation theory of price increases has emerged as a popular theory. It attempts to explain why prices rise when the economy is nowhere near full employment.

There are essentially three explanations of cost-push inflation: union power, big business power, and higher raw materials prices.

1. **Union power – or the 'Wage-Price Spiral'**
   Many people feel that unions are responsible for inflation. Their reasoning is as follows. Unions decide to demand a wage rise that is not warranted by increases in their productivity. Since the unions are so powerful, employers must give in to union demands for higher wages. When the employers have to pay these higher wages, their costs are higher. To maintain their usual profit margin, these business people raise their prices. This type of cost-push inflation seemingly can occur even when there is no excess demand for goods, and even when the economy is operating below capacity at under full employment. The union-power argument rests on the unions having a stronghold over their particular labour markets.

2. **Big Business Power – or the 'Price-Wage Spiral'**
   The other variant of the cost-push theory is that inflation is caused when the monopoly power of big business pushes up prices. Powerful corporations are presumably able to raise their prices whenever they want to increase their profits. Each time the corporations raise prices to increase their profits, the cost of living goes up. Workers demand higher wages to make up for the loss in the standard of living, thereby giving the corporations an excuse to raise prices again, and so a vicious price-wage cycle is established.

3. **Raw Materials Cost-Push Inflation**
   Since the 1973 beginning of higher and higher prices for all forms of energy, a relatively new type of cost-push inflation has been suggested. It is **raw materials cost-push inflation** because the cost of raw materials seems to keep rising all the time. Petroleum is more expensive, so is natural gas, and so are many other basic inputs into production processes.

To analyze the issue more critically we must take note of the fact that **cost-push inflation** is due to **autonomous increases in firms' costs,** and it is usually regarded as being primarily a wage-inflation process. This is due to the fact that wages make up by far the greater part of total costs (about 70 per cent). Nevertheless cost inflation can originate in any other item of costs such as **a rise in import prices** or **an increase in indirect taxation**. Focusing attention on wages may be justified not only because wages are the most important cost item, but because, if other components of total costs increase, there seems no reason why an upward trend of prices should be set in motion. A rise in import prices or an increase in indirect taxation could lead to a once and for all increase in the general price level. A rise in

wages which leads to an increase in prices is likely to generate an inflationary spiral because the increase in prices is one of the main causes of **further wage demands**.

In times of full employment, or near full employment, trade union bargaining powers are very strong. They will certainly be strong enough to maintain the real incomes of their members by raising money incomes to match any increases in prices. In fact, they have proved that they can achieve more than this and claims for higher wages are usually based on adjustments designed to increase the real income of union members.

In industries where productivity has been increasing at a favourable rate, such wage claims will not be strongly resisted since labour costs will not be seriously affected. A major basis of union wage claims, however, is the 'comparability argument'. Unions are concerned to maintain the same relative differentials between the rates of pay of different groups of workers. A major settlement in a key industry will be followed by a chain reaction of wage claims designed to restore the previous differentials. Such claims, if pressed successfully, will almost inevitably exceed the general increase in productivity and raise labour costs. Employers will attempt to protect their profit margins by raising prices. This increase in prices will lead to further wage claims and a further settlement which increases costs, and prices rise once again. This is the familiar pattern of the **wage-price spiral**. In this sequence **factor costs are pushing up prices**. Any autonomous increase in costs can initiate a cost-push inflation.

Whether it be union power, big business power, or higher prices for raw materials, the resultant increased cost of production pushed prices up; hence the term cost-push inflation. One solution offered as a way to stop, or at least slow down, cost-push inflation is wage and price controls. However, price and incomes policies are usually used to attempt the control of inflationary pressure for only short periods of time.

MEASURING INFLATION

If inflation is defined as a sustained rise in the general price level, how do we come up with a measure of the rate of inflation? This is indeed a thorny problem for government statisticians. It is easy to determine how much the price of an individual commodity has risen: if last year a light bulb cost 50p and this year it costs 75p, there has been a 50 per cent rise in the price of that light bulb over a one-year period. We can express the change in the individual light bulb price in one of several ways:

(i) the price has gone up 25p;
(ii) the price is one-and-a-half (1.5) times as high;
(iii) the price has risen by 50 per cent;
(iv) by using an index number.

INDEX NUMBERS

An index number of the price rise just discussed is simply the second choice above multiplied by 100, that is, the index number would be 150. All we need to do now is select a base year to compare prices.

Computing a Price index

Of course, the problem becomes more complicated when we are dealing with a large number of goods, some of whose prices have gone up faster than others, and some may have even fallen. What we have to do is pick a representative selection, a so-called **'basket' of goods and services** and compare the cost of that 'basket' of goods and services over time. When we do this, we obtain a price index, which is defined as the cost of our representative basket of goods today, expressed as a percentage of the cost of the same basket of goods in some starting, or base, year. In other words,

$$\text{price index} = \frac{\text{cost today of 'basket'}}{\text{cost of 'basket' in base year}} \times 100$$

A simple numerical example of a price index calculation is given in Figure 3.3. In this example there are only two goods in the basket — corn and microcomputers. The quantities in the basket remain the same between the base year 1985 and 1990. Only the prices change.

Figure 3.3 - Calculating a Price Index for a Basket Containing Two Goods Only.
In this simplified example, there are only two goods - corn and microcomputers. The base-year quantities and prices are given in columns (2) and (3). The cost of the 1985 basket is calculated in column (4) and totals £1 400. The 1990 prices are given in column (5). The price of the basket in 1990 is calculated in the last column and is £1 700. The price index of 1990 compared to 1985 ends up as 121.43.

(1) Commodity	(2) 1985 basket quantity	(3) 1985 price per unit (£)	(4) Cost of basket in 1985 (£)	(5) 1990 price per unit (£)	(6) Cost of basket at 1990 prices (£)
Corn	100 bushels	4.00	400.00	8.00	800.00
Microcomputers	2	500.00	1 000.00	450.00	900.00
Totals			1 400.00		1 700.00

$$\text{Price index} = \frac{\text{Cost of basket in 1990}}{\text{Cost of basket in base year 1985}} = \frac{1\,700.00}{1\,400.00} \times 100 = £121.43$$

STATISTICAL WEIGHTS

So far in this section on measuring inflation we have discussed three goods: light bulbs, corn, and microcomputers. Obviously price rises in corn will affect the general public more than the price rises in light bulbs and microcomputers (especially microcomputers as these are a luxury item). To some extent this was catered for in our simple example by having a **larger quantity** of corn.

In official measurements, however, each item that is measured is allocated a **'statistical weight'** according to **its importance for the average family** - this is ultimately determined by the percentage of average income that is spent on each food. Therefore, the statistical weight for food will be far higher than that for cigarettes, as changes in food prices affect everybody, whereas cigarette prices only affect smokers.

Real-world Price Indexes

The two most common indicators of the price level are:

(i) the Consumer Price Index (CPI), and
(ii) the Implicit Price Deflator for GNP (IPD)

The Consumer Price Index (CPI) estimates the cost of a given bundle of goods and services as a percentage of the cost of the same bundle in a base year.

The Implicit Price Deflator (IPD) estimates the average change in prices of all final goods and services between a base year and a given year.

<u>Case Study: Official Price Indexes in Britain</u>

A number of price indexes are used in the United Kingdom. The three official price indexes mostly used are the Retail Price Index, Tax and Price Index, and Producer Price Index. To understand the principles involved we discuss below the most important among all:

The Retail Price index (RPI)

The most often quoted of all prices indexes is the Retail Price Index (RPI). The Department of Employment uses essentially the same techniques as outlined above for this index, but of course they measure the movement of far more prices. In fact, approximately 600 goods and services are 'priced' each month in the various retail outlets up and down the country. This is administered by the 200 or so local employment offices, who end up, between them, with a total of approximately 130 000 price quotations.

These price movements are averaged out for the country as a whole by the Department of Employment. Their relative importance is then accounted for by the average price changes for each group of goods multiplied by the statistical weights. The index is then published in percentage form displaying its monthly change.

Those 600 items that are chosen for measurement and the statistical weights allocated are meant to represent the average households, that is, those in which the main breadwinner is neither a pensioner nor a millionaire. Indeed, the Index does not attempt to measure the cost of living of the top 4 per cent in the income scale or those households which rely for the majority of their income on state pensions and benefits. In fact, separate price indexes are calculated for pensioners.

The Accuracy of Price Indexes

There is continuous debate about how accurate the measured price indexes really are. Do we have an accurate view of the 'rate' of inflation? We cannot answer that question completely, but we can point out the potential biases in them.

More important, perhaps, is the bias imparted because of improper accounting for changes in quality. For example, at the same nominal price a good is actually cheaper if its quality has been improved. Conversely, at the same nominal price a good is actually more expensive if its quality has fallen. It is difficult for government statisticians to take quality into account.

It is also difficult for government statisticians to take into account immediately the introduction of new products, such as personal home computers, compact discs, and other consumer products that may not have been widely marketed when the original basket of goods was surveyed. But then the composition of the basket measured by the RPI is, at least, adjusted annually.

Key Points 3.2

- Once we pick a 'basket' of goods, we can construct a price index which compares the cost of that basket today with the cost of the same basket in a base year.
- The Retail Price Index (RPI) is the most often used price index.
- All price indexes suffer from certain inaccuracies. For example, they have a hard time taking into account quality changes and the 'baskets' may not always be entirely representative of the purchases actually made.

The Effects of Inflation

Everybody complains about inflation. Just about everybody assumes that inflation is 'bad'. In order to determine how bad it is for you, you have to figure out:

- what happens to earnings during inflation,
- what happens to the value of the things you own, and
- what happens to the debts you owe.

In a moment we shall examine these general effects, but first it will help if we distinguish between **'anticipated'** and **'unanticipated' inflation.**

We define **unanticipated inflation as that inflation rate which comes as a surprise**, as it were, to individuals in the economy - or at least to the majority of them. For example, if the inflation rate in a particular year turns out to be 10 per cent when the majority of people thought it was going to be 5 per cent, there will have been unanticipated inflation - or an inflation greater than that which was anticipated.

Anticipated inflation is that rate of inflation that the majority of individuals believe **will occur**. If the rate of inflation this year turns out to be 10 per cent, and that is about what most people thought it was going to be, then we are in a situation of fully anticipated inflation. Many of the problems caused by inflation are due to the fact that it is unanticipated. For when it is anticipated, some people are able to protect themselves from its 'ravages'. With this distinction between anticipated and unanticipated inflation in mind, we can move on to see the relationship between inflation and interest rates.

1. Inflation Effects and Interest Hates:

Let us start in a hypothetical world in which there is no inflation and no anticipated inflation. In that world, you may be able to borrow - in order to buy a house or a car - at some **nominal, or market, rate of interest** of, say, 6 per cent. If you borrow the money to purchase a house or a car and your anticipation of inflation turns out to be accurate, then you will not have been fooled, and the lender will not have been fooled either. The money you pay back in the years to come to pay the interest on that loan will be just as valuable in terms of purchasing power as the money that you borrowed.

But what about a situation in which you borrow at 6 per cent and the following year there is unanticipated inflation of, say 6 per cent? Lucky you! For you will be able to pay back the lender in cedis that are depreciating at the rate of 6 per cent a year. In effect, **the real rate of interest** that you will be paying will fall to practically zero. But of course, the lender will not be quite so happy. Consequently, if you, the lender, and everyone else now anticipate that inflation will remain at 6 per cent per year, the next time the lender offers a loan, he or she will add on a 6 per cent inflationary premium to cover the depreciation in the purchasing power of the pounds repaid by borrowers.

Creditors lose and Debtors gain with unanticipated inflation

Now you are in a position to understand why creditors lose and debtors gain with unanticipated inflation. In the above example, unanticipated inflation caused the debtor to benefit. Why? Because the debtor was not initially charged a nominal, or market, interest rate that covered the rate of inflation that actually occurred. Why? Because the lender did not anticipate inflation correctly. The point to understand is that creditors lose and debtors gain whenever inflation rates are **underestimated** for the life of a loan.

Inflation tends to redistribute wealth from lenders or creditors to borrowers or debtors. In an inflation the rate of interest may well be below the rate of inflation. This means that lenders are really paying a negative real interest rate to borrowers for the doubtful privilege of lending to them! The biggest borrower of all is usually the government. Inflation can be thought of as a hidden tax that re-distributes wealth to the government and reduces the real value of the national debt. This suggests that governments may not always be as keen as they pretend to control inflation completely!

It is, of course, possible that the rate of inflation be overestimated. When unanticipated inflation is therefore negative, creditors gain and debtors lose. Obviously, whenever

nflation is correctly anticipated by both creditors and debtors, neither class of individuals oses (or gains).

2. Inflation and Savings

Inflation alters real interest rates and real interest income. It also erodes the purchasing power of saving and principal on loans.

For example, suppose that a family of modest means has managed to accumulate savings of ¢1000 which it has deposited in a savings account that pays an interest rate of 6% per year. At the end of a year, the money value or nominal value of the principal and interest is ¢10 million x 1.06 = ¢1060, This increase in the nominal value of principal and interest is an illusion, however, unless prices are stable. If prices rose by 10% over the year, the purchasing power of ¢1000 would be about ¢960 i.e. ¢40 less than the purchasing power of ¢1000 a year earlier. In other words, the saver has earned real interest of - ¢40 or a real interest rate of – 4% per year. The effect would be the same on a lender who lent out ¢1000 at 6% interest under the same conditions.

Obviously, the prospects of very low or negative real interest rates are a deterrent to saving and lending. Under this circumstances the household would have an incentive to consume its ¢1000 rather than save it at a negative real interest rate. Inflationary expectations lead lenders to charge an inflation premium, as part of the nominal interest rate on loans to protect against a loss of purchasing power. Even this premium, however, is no guarantee against loss if the rate of inflation turns out to be higher than anticipated by lenders.

3. Inflation Effects on Holding Cash

Most individuals carry some cash in their wallets in the form of notes. Many individuals keep bank accounts that may average several thousand Ghana cedis. All of us use some form of cash and/or bank account balance because of the convenience they provide. All of us therefore lose value whenever there is inflation. That is, the purchasing power of the cash held in our wallets or bank account balances falls at the rate of inflation.

Take a simple example. Assume that you have stashed ¢1000 away underneath your mattress. If, by the end of one year, there has been an increase in inflation of 10 per cent, the purchasing power of that ¢1000 will be only about ¢900. You will have lost value equal to the 10 per cent times the amount of cash you kept on hand. In essence, then, the value of the cash we keep on hand depreciates at the rate of inflation. The only way we can avoid this type of inflationary tax, as it were, on the cash that we hold is by reducing our cash balances and purchasing valuable objects that will retain their value. Or by moving any spare cash into index-linked saving schemes.

4. Inflation Effects on Fixed-income Earners:

Beside the transfer of wealth from creditors to debtors during periods of unanticipated inflation, there is a similar redistribution of income away from those on fixed incomes.

Fixed incomes constitute student grants, old age pensions, dole money, and long-term contracts. Inevitably these payments do not cater for unanticipated inflation. Consequently persons who are solely dependent on fixed incomes lose purchasing power during periods of inflation. Indeed, even during periods of anticipated inflation these groups are in a weak negotiating position, and for most of them the only hope is that the annual review of their situation will help them catch up.

The only exceptions to this fixed-income effect are those who have negotiated index-linked contracts. This is becoming more and more common for those who work on long-term contracts, and also for some pension schemes. Index-linking, basically links income changes to movements in the Retail Price Index, thereby overcoming problems of leaving people on totally fixed incomes as inflation increases.

5. Inflation and Taxation

Inflation imposes a tax on incomes in two ways:

(i) It reduces the purchasing power of the cedis we receive as money.

(ii) It imposes taxes in more subtle way. The Income tax is a progressive tax ie high incomes are taxed at higher rates than low incomes, income taxes are calculated on money income but not on real incomes. In the absence of indexation, inflation raises the average rate of taxation through the process of fiscal drag.

Taxes that depend on money incomes create a windfall gain of tax margin for the government during inflationary periods - a gain that requires no politically risky legislation. If and when public pressure to reduce the tax burdens becomes irresistible, the government can enact popular "tax cuts" that do not cut taxes at all.

6. Inflation Effects on Business Environment:

Some economists believe that the main cost of an unanticipated inflation is the resources used to protect against inflation, and the distortions introduced as firms attempt to plan for the long run. In other words, business men have to spend time and resources to figure out ways to 'cover themselves' in case inflation is different from what it has been in the past. This may involve spending a longer time working out more complicated contracts for employment, for purchases of goods in the future, and for purchases of raw materials, or it may simply make any business decision impossible. The outcome is that business becomes more complex, expectations alter, and many firms may falter during inflationary periods. These problems are further compounded when the businesses concerned are heavily involved with imports or exports as exchange rates have to be estimated and these too are affected by inflation.

Long-term planning becomes very difficult. Firms may be tempted to divert investment funds out of productive investment into commodity hoarding and speculation. Profit margins may be severely squeezed in a cost inflation and firms can attempt to avoid this by making capital gains on property, land and even fine art and antiques rather than by using their funds in normal production.

7. Inflation also creates an unstable environment for economic decisions. If consumers expect high rates of inflation in the future, they tend to make big purchases (cars, appliances, and houses), now rather than wait until prices are higher in the future. If banks and other lenders expect high rates of inflation in the future, they will charge high interest rate on loans to protect themselves against losses of real income and wealth. High interest rates, in turn, tend to discourage purchases of items that are financed by debt.

8. In a severe **strato-inflation** money becomes less useful as a medium of exchange and a store of value. More money may be needed to finance the buying of goods at higher prices, but this is countered by the disadvantages of holding money which is falling in value. In a hyper-inflation the use of money may completely break down and be replaced by less efficient barter. This imposes extra costs on most transactions.

The Effects of Disinflation

A slowing down in the rate of inflation can be termed **disinflation**. Disinflation creates its own problems whereby with unanticipated disinflation, creditors gain and debtors lose. Why? Because debtors have agreed to pay interest rates that turn out to be too high. If the nominal, or market, rate of interest for a three-year car loan is 16 per cent because the anticipated rate of inflation is say 10 per cent, any sustained reduction in the actual rate of inflation below 10 per cent will benefit those finance houses providing the funds for the car loans.

CRITICAL EXAMININATION OF THE SOURCES OF INFLATION

The sources of inflation are many and the following are among the most important of them:

1. Deficit Financing by the Government

Each year, governments implement various projects. They also pay the salaries of public servants. Contractors who have undertaken various projects have also to be paid.

Governments get most of the money for their projects from taxes. However, during any specified year, most governments cannot raise enough tax revenues for financing all their projects. Therefore, the government budget would be in *deficit*.

Although it could happen, it is very rare for governments to print money to finance their deficits. This is because they have central banks to take care of this and other related responsibilities. The normal practice is for the government to borrow funds it needs to spend. This is referred to as *deficit financing*. Governments normally borrow funds through the sale of financial instruments. These are pieces of printed paper with names such as government bonds, government securities and treasury bills.

The central bank is the government's agent for selling its financial instruments. As also the bank

for the government, the central bank also manages the demand deposit accounts of the government.

The stock of money or the money supply is made up of only the currency and the demand deposits of the public. The public buys the financial instruments of the government by giving up an equivalent amount of currency or demand deposits. The funds now available to the government would then not simultaneously be available to the public.

Let us assume that the government immediately spends the funds it borrows from the public on its projects. The spending increases the incomes of people in the country. However, the money supply has remained the same and has neither increased nor decreased. This is mainly because the money that the government spent was part of the current money supply. No fresh money has been added to the money supply, as we have defined it. Therefore, the proportion of the stock of money to the goods and services available has also remained the same. The funds spent by the government will also leave the price level about the same as before.

Let us now look at an alternative situation in which the public did not buy all the government securities. The central bank normally buys the remainder. This means that the central bank is lending to the government *fresh* or *new* money that was not part of the supply or stock of money, because it did not come from currency and demand deposits of the public. The central bank adds (i.e., credits) these funds to the government's demand deposit account which is kept at the central bank.

We now look at what the government does and its effects:

a. The government spends the new money. It does this by writing cheques against this new money on its demand deposit account in the central bank. Of course, government cheques are as good as money and nobody ever refuses them. This spending adds more money, i.e., new money, to the existing money stock or money supply.
b. When the government spends, it is competing with households and firms in the same market for goods and services.
c. Other conditions remaining the same, this increased competition, because the government has more money to spend, forces prices to rise.

Indeed, in all countries, whether industrial or developing, budget deficits financed by this method of creating and spending new money have been the most important causes of inflation. This happens under the following conditions:

a. When, as may rarely happen, the economy is near to full employment; or
b. Under conditions where the economy is simultaneously suffering from both recession (i.e., less than full employment or economic stagnation) and inflation. This condition of ***stagflation,*** is now common in both the industrial countries and the developing countries.
c. As happens in developing countries, the economy is not dynamic enough. Increases in the demand for goods and services are not matched by rapid increases in supplies.

We should note here that, if an economy is very dynamic ((assuming there is spare capacity) and can speedily supply the goods and services for which demand is increasing, deficit financing would have less inflationary results. However, all direct expenditure by

governments adds to inflationary pressures. In most cases, this is because the same activity by the government is done less efficiently, compared with its being undertaken by private persons who freely work in their own interest.

Some methods of government spending add more to inflation. Others add less. Let us now examine the following methods, starting from the most inflationary to the least inflationary impact of government spending:

a. *Funds borrowed directly from the central bank:* This is the most inflationary.
b. *Funds borrowed from the public:* This is not as serious as spending funds borrowed from the central bank.
c. *Funds got from taxes:* This has the least effect on increasing price levels, particularly if the funds come from direct taxes, as we have already discussed. However, taxes are not popular. Therefore, governments are very careful about increasing them.

2. Credit or Loan Expansion by Commercial Banks

When banks expand their loans and other credit facilities, they inject more money into the economic system. Those who gain the increased funds in their demand deposits can now spend them on various goods and services.

This would be additional demand being placed on existing stocks of goods whose supply may not be increasing fast enough. The eventual effect would be to increase the general level of prices in the market.

Other Sources of Inflation

3. **Fiscal policy:** Fiscal policy means the taxing and spending policies of the government. Fiscal policy has legitimate and, in some cases, indispensable functions within an economy. It can contribute toward an effective management of the economy by providing the right infrastructural investment necessary for improving the productivity of the population.

   The wrong types of fiscal policies can also lead to economic mismanagement. For example, the financing of worthless projects by the government, administrative incompetence, corruption and too many unproductive or even counterproductive procedures can cripple private initiative and the capacity of firms to produce or to smoothly supply items into markets.

   One result of economic mismanagement by governments is persistent inflation, even while there are serious problems of unemployment. Under the two aspects of fiscal policy, we should note the following situations that could cause inflation or make it worse:

   a. *Taxing policy.* If taxes discourage production, then aggregate supply would be relatively low or would increase too slowly. Under these conditions, even under the same rate of increase in the *nominal* money supply, prices would increase.

      Of course, if the nominal money supply keeps being increased, then prices

would rise at a much faster rate. This is what is happening in all developing countries with serious problems of inflation.

b. *Spending policy.* It has been shown under all types of economic systems that government enterprises in agriculture, industry and other economic sectors are usually less efficient, as compared with private enterprises that provide or could produce the same type of goods and services. The government would be paying salaries and wages for inferior and lower levels of output. These conditions of money being injected into the economic system in payment for inferior levels of production create inflation or add to one that already exists.

Yet another source of inflation is the government spending vast sums on investment that take several years, before they begin to increase the output of goods and services. These projects are said to have long *gestation periods*. Examples include infrastructural projects, such as education, culture, highways, afforestation, huge port and road construction projects, etc. These are very necessary and highly useful projects. However, they take long to complete, *before they* can begin to help in national economic growth and development.

Throughout the long period of waiting for concrete results in the form of goods and services coming into the market, money would meanwhile have been injected into the economy in the form of wages, salaries and other payments. Let us assume that the economic system is not simultaneously creating more goods and services on which to spend these additional injections of money. During this period, there would then be a condition of more money chasing fewer goods and services. This would result in increased price levels throughout the entire economy.

We should emphasize by repeating that government projects are usually less efficient than the same projects undertaken by the private sector. Some of these public projects may be desirable but would not normally be independently undertaken by private firms, unless they are contracted to do so. *Therefore, for* most developing countries that already are not dynamic in the production of goods and services, government projects tend to contribute most of the inflationary pressures.

4. **Economic decline:** The economies of some developing countries are either not growing (i.e., zero or static growth) or even producing less than in previous years (i.e., negative growth). Let us assume that there is a specified stock of money that is not increasing. This means that there would be more money being used for fewer and diminishing volumes of goods and services. Prices would rise and may even keep increasing.

An economy with a negative rate of growth means that unemployment would be increasing and incomes would be declining. These conditions do not permit the public to buy more government securities. Therefore, the central bank may buy them. When the government uses these funds, the money supply would then be increasing, while the performance of the economy would be declining. This would add more speed to the rate at which prices would meanwhile be rising.

5. **Counterfeiting:** Counterfeiting of money occurs when individuals use their own initiative to print money (i.e., bank notes) or to mint coins that are part of the legal tender

(i.e., token money) of a country. This may not be a serious problem, if the police and other enforcers of the law are very effective.

Central banks in economic systems suffering from serious inflation often issue bank notes of very large values or denominations for the following reasons:

a. They reduce the volume of notes that have to be printed and, therefore, the cost to the central bank of doing so.
b. They are more convenient for people to use in their financial transactions, compared with having to carry large quantities of bank notes of smaller denominations.

Meanwhile, currency notes of large denominations also encourage counterfeiting.

REACTIONS OF INDIVIDUALS DURING PERIODS OF INFLATION

Inflation is one of the most serious economic problems of both industrial and developing countries. During periods of rising prices, money (whether in the form of currency or demand deposits) speedily loses its value, as measured in its buying power. To protect the market value of their assets (i.e., material wealth) individuals take all types of precautions. Most of these reactions further increase the inflation. Therefore, inflationary conditions tend to fuel or cause more inflation. The following are some of these measures that are undertaken by those who can do so:

1. **Hedge against inflation:** People buy non-money assets whose values they expect either to increase, i.e., *appreciate,* or at best remain constant, i.e., they do not *depreciate,* with the passing of time. Some of these assets include land, buildings, works of art, ancient or antique items and jewelry made of gold, diamonds and silver.

2. **Preference for buying and selling:** Buying and selling helps in increasing one's earnings or, at least, prevent reductions in one's wealth. To do this, a person buys specified goods at relatively lower prices and sells them much later, even if this is within hours, at much higher prices. Sellers include normal business firms, politicians, public servants and just about any other persons who manage to get stocks of tradable items.

   Under conditions of high levels of unemployment, as exist in many African and other developing countries, all occasions (including periods of inflation) provide employment opportunities for the unemployed who are able to get some goods for resale. Crowds of young persons can be seen selling all types of items at the intersections of major streets. Every individual is a potential entrepreneur, if he or she is not already involved in the sale of goods and services.

   It takes much longer to produce or manufacture goods, compared with trading in those that have already been produced. For these reasons, periods of inflation discourage the production and manufacture of goods and services that take relatively too long to produce. Most people obviously *prefer* buying and selling, because the risks are relatively lower and nominal profits are relatively higher and reasonably certain

3. **Efforts by firms at decreasing future costs:** There are two approaches that may be used
   a. Firms try to keep more *inventories* of inputs than they need for immediate production. If they wait in buying the same inputs, they would later on be paying relatively higher prices, if they are lucky to find the affected items. Buying inputs at relatively lower prices permits the sale of the finished products at much higher prices caused by the continuing inflation. Of course, as most firms tend to use the same strategy, the competition to buy inputs makes their prices to rise at much faster rates,
   b. Firms strive to enter into long-term contracts for their inputs to be delivered *at fixed prices*. For those who can do this, they are assured of stable prices for their inputs.

4. **Efforts for maintaining stable values of expected incomes:** Employees, contractors and beneficiaries of all types of financial transactions strive to have future incomes owed to them to be linked to an acceptable price index.

   This strategy helps to maintain the real values or purchasing power of these sums that are expected in the future. This process is *referred* to as *indexation*. Therefore, as price indices rise, relevant adjustments are made to the affected salaries, wages, sums that contractors will receive and other expected payments.

5. **Emergence of two sets of currencies::**
   If the opportunities exist, firms and households will increase their use of foreign currencies, particularly in paying for relatively expensive items. There are two forms that this will take:
   i. Foreign currencies will actually be used in paying for certain items.
   ii. Most businesses would tend to use the values of foreign currencies, as units *of accounts* in estimating the value of goods and in contracts dealing with future financial obligations (e.g., loans, salaries, pensions and several others). This is a form of indexation discussed above.

   For most people, the local currency could continue to be used only for relatively minor daily transactions, because this is what is most readily available medium of exchange. Therefore, two sets of money would exist within this economy: the local currency for *transactions*, while foreign currencies would serve as *units of account*. If inflationary conditions continue to get worse, foreign currencies would gradually replace local money.

   International banks and other financial institutions use units of accounts, such as the Special Drawing Rights (SDRs) of the IMF and the European Currency Unit (ECU) of the European Union (EU) in contracts with their customers. They do this to have stable values in our times of inflation.

6. **Resort to forms of barter:** Where there are no opportunities for using direct indexation or the indirect one of foreign currencies, people will increasingly be forced into barter. Any object that has its own original uses and can also serve as money has the dual function of commodity money. Therefore, long periods of barter tend to create their own versions of commodity money that central banks cannot regulate. Under conditions of rampant inflation, employees would increasingly prefer to be paid in

goods rather than in local currency. They know that the values of commodities would keep increasing, while the purchasing power of the local currency would rapidly be declining.

7. **Capital flight:** There are two forms of this capital flight:
   a. ***Flight of financial capital:*** During the earlier stages of rapid inflation, the capital flight will be that of local currencies exchanged into foreign convertible currencies (i.e., foreign exchange) for two purposes:
      i. People and firms become their own mini-banks and keep these funds, as a more stable store of value for some of the wealth they own. Some of the foreign money can occasionally be reconverted into the local currency, when the need arises.
      ii. Extra amounts beyond planned expenses on local items are transferred into private bank accounts in other countries. This transfer of funds is referred to as *capital flight.* It has been a very serious economic problem for most developing countries.

Obviously, the countries that are gaining these extra funds, mainly the industrial and already wealthy, have the following benefits:

(i) *Improvements in the balance of payments:* Inflows of funds from other countries are *credit entries* in the balance of payments. They make it easier for the receiving country to have very low or no deficits or even to build surpluses in their balance of payments;

(ii) Additional *free reserves for host banks:* Commercial banks in the receiving country have extra liquidity that would enable them to finance more domestic credit expansion for economic growth. This means increased business ventures, employment opportunities and higher standards of living for the population;

(iii) *Strengthening the host currency:* An increased demand strengthens the international exchange value of the currency that is used for the capital flight.

(iv) *More "foreign aid":* The government of the receiving country, usually an industrial country, can have more access to funds from its own population and local banks. Part of these funds are what are used for extracting more commercial advantages from developing countries through all the various expensive loans that have the misleading name of "foreign aid";

(v) *Increased inheritance:* The banks in Switzerland and in other safe havens for capital flight inherit vast sums of money of individuals who die and have no surviving claimants with precise information about these accounts or convincing proof of being the rightful inheritors of these fortunes.

   b. ***Flight of human capital:*** When inflation has got very bad and threatens to get worse, many residents migrate to other relatively more prosperous countries. After World War II (1939-1945) many people migrated from Germany to the U.S. and other countries. Today, stagflation has combined with other factors to cause many citizens of Third World countries and parts of the former Soviet Union to migrate, with preferred destinations being the industrial countries.

DEFLATION

Periods of economic deflation are also often described as *economic recession* or if they get worse, as *economic depression*. Deflationary conditions are the opposite of those that are inflationary. During these periods, an economic system experiences:

- slow or unusually low rates of economic growth,
- low demand, reduced business investment and
- unusually high levels of unemployment.

Price levels may also fall, as most businesses strive to sell their stocks, fearing that future prices would be even much lower than those of the present. However, these worsen the deflationary conditions.

Not being sure of when and from where the next income will come, people become more cautious about spending. Therefore, they reduce their demand for a wide range of goods and services. The result is almost similar to less money chasing specified stocks or diminishing quantities of goods.

Falling demand and prices do not encourage business firms to invest and to produce more goods. As long as the pessimism persists, the economic gloom keeps getting worse. Economic recessions become depressions. The solution to economic recession or depression lies in making firms and households more optimistic about the economy. This is achieved or supported by an appropriate mixture of monetary and fiscal measures.

SOLUTIONS FOR INFLATION AND DEFLATION

The solutions for economic conditions of inflation and deflation have many aspects to them. Both inflationary and deflationary situations discourage productive activities. For these reasons, when inflationary or deflationary conditions worsen, they *create* and sustain social and political unrest. There are the following three ways of solving these problems:

1. **Fiscal Policy**
2. **Monetary Policy**
3. **Economic development:** This is a much wider or more comprehensive approach that combines all the very important measures that reinforce each other.

The two most important national institutions in this endeavour are:

(a) **The Government:** It needs to adopt a better strategy for economic and social management of the country. For most developing countries, a central pillar in all the needed measures is that of working toward national self-reliance, as against reliance on "foreign aid" and the various pressures that this creates for a developing country. Governments need to strive more for balanced budgets, borrow less from the public and avoid doing so from the central bank.

(b) **The central bank**: This institution has very powerful tools which can be used to systematically regulate the money supply. In addition, the central bank can regulate the types of activities for which banks can grant loans. A central bank can be effective, if it is independent in implementing the responsibilities

it was set up to discharge. Most governments in developing countries are very reluctant to allow much of this desirable level of independence.

The policies of both the central bank and the government need to be coherent and to reinforce each other. These policies should continuously be carefully monitored regarding how effective they are. Meanwhile, there are other supplementary policies. One set of them should be aimed at improving the productivity and welfare of disadvantaged groups, such as the poor, the unemployed and those in the low-income groups.

People are poor, because they are less productive. The opportunity costs to these persons and to the nation are very high. Their present levels of low productivity are a waste of national resources. This can easily be passed from them to their children and down to future generations of this group of underprivileged persons. Therefore, helping to make the poor more productive is critical for national economic health

Summary of underlying Concepts

1. Inflation, deflation and reflation

Inflation is usually defined as a **persistent or continuing tendency for the price level to rise.** Although **deflation** is strictly the opposite - **a persistent tendency for the price level to fall** - the term is usually used in a rather looser way to refer to a reduction in the level of activity or output. In this sense, a **deflationary policy** reduces the level of aggregate demand in the economy. Some economists find the terms **disinflation** and **disinflationary policy** preferable. Likewise, **reflation** refers to an increase in economic activity and output, and **a reflationary policy** stimulates aggregate demand. In a sense inflation is reflation 'gone wrong', increasing the price level rather than real output.

2. Types of inflation

(a) **Suppressed inflation:** Although inflation involves the tendency for the price level to rise, it is not inevitable that prices will actually rise. Strong governments may successfully introduce tough price controls which prevent the price level from rising without at the same time abolishing the underlying inflationary process. The suppression of rising prices diverts the inflationary process into quantity shortages, queues, waiting-lists and black markets.

(b) **Creeping inflation:** The inflation rate experienced by most industrialized countries in the 1950s and early 1960s was fairly stable from year to year, averaging less than 5%. However, throughout the period it gradually crept upwards, developing into a **strato-inflation** in many countries in the late 1960s and early 1970s

(c) **Strato-inflation**: Whereas creeping inflations were typical of industrial countries in the post-war period, strato-inflation was the experience of developing countries, particularly in Latin America. In a strato-inflation the inflation rate ranges from about 10% to several hundred per cent, and it may be particularly difficult to **anticipate**.

(d) **Hyper-inflation:** The transition from a creeping inflation to a strato-inflation in the early 1970s raised fears of an acceleration into a hyper-inflation. The famous German inflation of 1923 was a hyper-inflation, and similar but less publicized hyper-inflation occurred in other countries in central and eastern Europe at the end of both World Wars. However, hyper-inflations are usually short-lived and they should not be regarded as typical. A hyper-inflation usually occurs in a severe political crisis when a government turns to the printing press to create money to pay its debts. Inflation can accelerate to a rate as high as several thousand per cent a year. During the hyper-inflation, money ceases to be a medium of exchange and a store of value, and normal economic activity may completely break down.

(e) **Stagflation (or Slumpflation):** In the 1970s and early 1980s the incidence of both relatively high rates of inflation and increasing unemployment in the developed world led economists to coin the word '**stagflation**'. It combines **stagnation** in the economy (low or negative increases in output) with **price inflation**. Its existence made conventional Keynesian demand management policies seem inappropriate and politically damaging as a means of controlling either unemployment or inflation

EXAMINATION PREPARATION

MULTIPLE CHOICE QUESTIONS

One or more of the options given in Questions 1 and 2 may be correct. Select your answer by means of the code set out in the grid:

A	B	C	D	E
1, 2, 3 all correct	1, 2 only correct	2, 3 only correct	1 only correct	3 only correct

1. A rise in house prices can be caused by
   1 a decline in house building
   2 an increase in lending by building societies
   3 a rise in mortgage rates

2. 'Cost-push' inflation may be caused by
   1 increased prices of imported raw materials
   2 exchange rate of depreciation
   3 wage increases unrelated to rises in productivity

3. In which of the following cases may tax payments rise as income rises?
   I) Proportionate tax II) Progressive tax III) Regressive tax
   (a) II only (b) I and II only (c) I and III only (d) II and III only (e) all of them

4. A progressive tax may be described as one where tax payments:
   (a) rise as income increases
   (b) fall progressively as income increases
   (c) rise at a decreasing rate as income rises
   (d) are constant proportion of income
   (e) rise at a faster rate than income rise

5. If a retail price index changes from 250 to 260 over a period of twelve months, this would indicate that
   (a) the standard of living has fallen
   (b) wages will need to rise by 4% if incomes are to keep pace with price rises.
   (c) The pattern of consumer expenditure has probably changed during the year
   (d) The value of money has fallen

6. Suppose the Ghana government decides to introduce a poll tax, which will involve a flat rate levy of 30,000 cedis on every adult member of the population. This new tax could be described as
   (a) regressive (b) proportional (c) progressive (d) ad valorem (e) VAT

7. The total yield from an indirect tax levied on a good is likely to be greatest when:
   (a) demand is inelastic, supply is inelastic (b) demand is inelastic, supply is elastic
   (c) demand is elastic, supply is elastic (d) demand is elastic, supply is inelastic

8. Which of the following will *not* be the immediate purpose of a tax measure by the government?
   (a) To discourage an activity regarded as socially undesirable
   (b) To influence interest rate up or down
   (c) To protect a domestic industry from foreign competition
   (d) To price certain products so as to take into account their social cost

9. If all prices doubled (with weights unchanged), which of the following would be true
   i) real incomes have halved
   ii) the price index will double
   iii) the proportions of incomes spent on each of the goods is unchanged
   (a) I only (b) I and II only (c) I and III only (d) II and III only (e) all of them

10. The term *fiscal drag* refers to
    (a) the amount of taxation that can be levied on an economy within a given time period
    (b) the effect of inflation on the real value of flat rate taxes
    (c) the reduction in the quantity sold of an item caused by the imposition of VAT
    (d) the increase in the proportion of income taken through taxation caused by inflation
    (e) the detrimental effects of fiscal policy on an economy's rate of growth

RELATED ESSAY QUESTIONS

1. Discuss the economic argument that government should curb the power of trade unions.
2. Is it meaningful to identify different causes of inflation?
3. What are the costs and benefits of inflation? Do the benefits of inflation ever justify a government allowing inflation to continue in an economy?
4. What are the main characteristics and causes of unemployment Ghana at present? What are the costs of unemployment to the economy?
5. 'The costs incurred from the current level of unemployment in Ghana are unacceptably high'. Discuss.
6. (a) How do Keynesians and monetarists differ in their perception about the causes of mass unemployment
   (b) Examine the major types of unemployment and the need for such categorization.

CHAPTER FOUR

THE CIRCULAR FLOW OF INCOME, OUTPUT AND EXPENDITURE

INTRODUCTION

Individuals and firms are the fundamental participants in a market economy. Individuals own or control resources that have value to firms because they are necessary inputs in the production process. These resources are, broadly classified as labour, capital, and natural resources. Of course, there are many types and grades of each resource. Labour specialties vary from street sweepers to brain surgeons; capital goods range from brooms to computers. Most people have labour resources to sell, and many own capital and/or natural resources that are rented, loaned, or sold to firms to be used as inputs in the production process. The money received by an individual from the sale of these resources is called a factor payment. This income to individuals then is used to satisfy their consumption demands for goods and services.

The interaction between individuals and firms occurs in two distinct arenas. First, there is a product market where goods and services are bought and sold. Second, there is a market for factors of production where labour, capital, and natural resources are traded. These interactions are depicted in Figure 4.1 which describes the circular flow of income, output, resources, and factor payments, in a market economy.

In the product market shown in the top part of the figure, individuals demand goods and services in order to satisfy their consumption, desires. (It is necessary to distinguish between want and demand. Many individuals want goods and services but cannot afford to buy them. The term demand implies that the consumer has both the desire to have the good and the ability to buy it). They make these demands known by bidding in the product market for these goods and services. Firms, anxious to earn profits respond to these demands by supplying goods and services to that market. The firm's production technology and input costs determine the supply conditions, while consumer preferences and income (i.e., the ability to pay) determine the demand conditions.

The interaction of supply and demand determines the price and quantity sold. In the product market, purchasing power, usually in the form of money, flows from consumers to firms. At the same time, goods and services flow in the opposite direction - from firms to consumers.

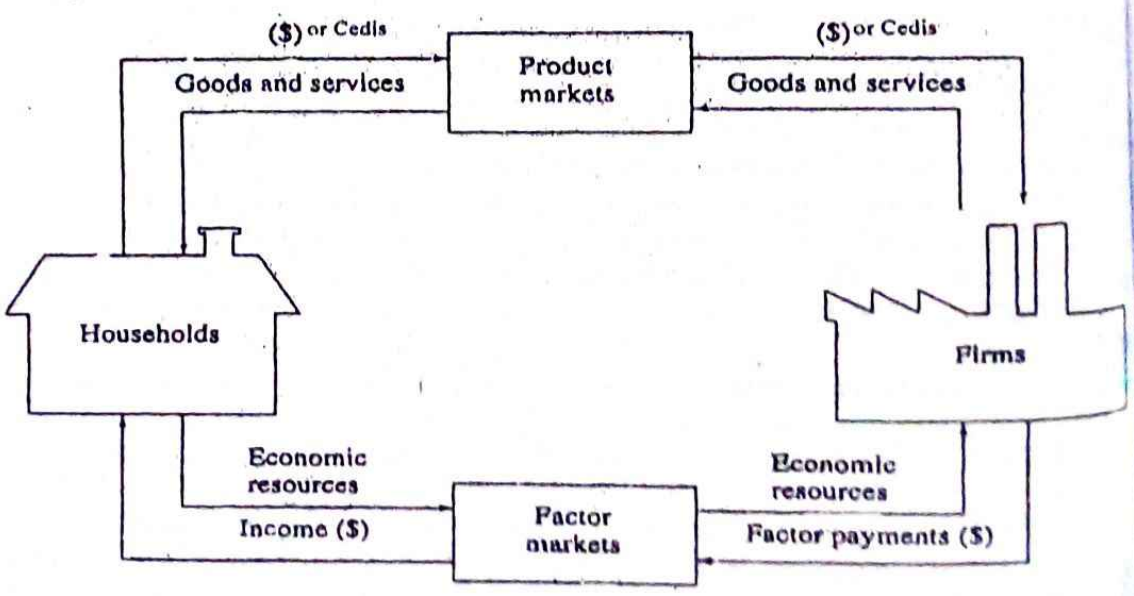
The factor, market is shown at the bottom of Figure 4.1. Here, the flows are the reverse of those in the product market. Individuals are the suppliers in the factor market. They supply labour services, capital, and natural resources to firms that demand them to produce goods and services. Firms indicate the strength of their desire for these inputs by bidding for them

in the market. The flow of money is from firms to individuals, and factors of production flow from individuals to firms. The prices of these productive factors are set in this market.

Prices and profits serve as the signals for regulating the flows of money and resources through the factor markets and the flows of money and goods through the product market. For example, relatively high prices and profits in the personal computer industry in the 1980s signaled producers to increase production and send more units of output to the product market. To produce more computers, more labour and capital were required. Firms raised the prices they would pay for these resources in the factor market to signal resource owners that higher returns were now available. The result was rapid growth in the personal computer industry as resources were bid away from other industries. In the early 1990s, this market became very competitive and prices fell substantially. Although total unit sales increased, the profit on each computer was smaller, and some firms struggled to keep total profit at an acceptable level. Consumers benefited greatly as better and more powerful computers became available at lower and lower prices.

In the market economy depicted by this circular flow, individuals and firms are highly interdependent; each participant needs the others. For example, an individual's labour will have no value in the market unless there is a firm that is willing to pay for it. Alternatively, firms cannot justify production unless some consumers want to buy their products. As a result, all participants have an incentive to provide what others want. All participate willingly because they have something to gain by doing so. Firms earn profits, the consumption demands of individuals are satisfied, and resource owners receive wage, rent, and interest payments. If some do not benefit by buying and selling in these markets, they are not required to do so. Thus, one can be sure that no individual is made worse off by voluntary trade in these factor and product markets. Indeed, the gains that accrue to the individual participants form the essence of a market economy.

Figure 4.1 The circular flow of Income, Output, Resources and Factor Payments



We now make a distinct move into pure macroeconomics - 'the world of totals'. Goods and services are produced by bringing together various factors of production. The **total output** (production) that arises is organized in millions of firms (owned by the public or private sector). The **total expenditure** on these goods and services emanates from millions of households (both at home and abroad). In this chapter we shall analyse the interrelationship of these various economic units (i.e. firms and households) to understand how a country arrives at a certain level of output, expenditure, and income. Therefore we shall begin to appreciate how the behaviour of one sector of the economy directly affects another.

BUILDING UP THE BASIC CONCEPTS

The Simple Circular Flow – (i.e. no government activity)

To begin our detailed analysis of the circular flow of income we ignore the government sector, the financial institutions sector, and the overseas sector. Technically such a model economy could be called a closed economy with no government sector. That is, it represents a simplified starting-point in which we analyse only the relationships between households and businesses. The complications of the real world will be built in later.

To make our starting model effective it is *assumed*:

- that households receive their income by selling the use of whatever factors of production they own,
- that businesses sell their entire output immediately to households, and
- that households spend their entire income on consumer products.

These assumptions are reasonably realistic. Businesses will only make what they can sell. Production will involve buying in land, labour, capital, and enterprise, and these factor (of production) services will generate their respective income payments: rent, wages, interest, and profit.

The concept of the circular flow of income as outlined has identified three basic principles:

(i) *In every economic exchange, the seller receives exactly the same amount that the buyer spends.*

(ii) *Goods and services flow in one direction and money flows in the other.*

(iii) *There is a close relationship between income, output, and expenditure.*

These principles are laid out in their traditional format in Figure 4.2. From Figure 4.2 it is possible to appreciate that the amount of economic activity in an economy can be measured in three ways:

1. By adding up the value of all the goods and services produced (in given period of time).
2. By adding up the value of all the income received (during that time-period).
3. By adding up the value of all the spending that occurred (during that period of time).

In each case the result obtained should be identical as:

total income ≡ total production ≡ total expenditure.

The symbol ≡ means "is identical with". It is used to distinguish an identity from an equation. An identity is a relationship that is always equal, as a matter of definition. These symmetrical identities will be discussed below.

land and capital.

1. Transfer payments, such as pensions, welfare benefits and unemployment pay, must be excluded from the estimate of national income, since they are simply transferred from one group of people to another without the recipients adding to production. If such transfers were wrongly included in national income, the error of double-counting would occur.
   Nevertheless, the national income statistics include arbitrary judgements on what is and is not 'productive work'. Thus an imputed rent is estimated for the values of the services received by owner-occupiers from the houses they live in, equal to the rent which would be paid if they were tenants of the same properties. But the housekeeping allowance paid by a husband to his wife is excluded, implying that housework is unproductive! It follows that if a man marries his house-keeper, or if he decides to paint his own house where previously he employed a decorator, the estimates of national income will fall!

2. On the other hand there are some payments to factors of production which do not enter into the total of personal incomes. Items such as ***undistributed profits*** of companies and the ***trading surpluses*** of publicly owned bodies (such as the nationalised industries) are factor incomes which do not find their way into the incomes of households. Corporate income of this nature must be included in the national income since it represents payments to factors of production.

3. The gap between the GDP total obtained by the income and expenditure methods is often used to approximate the size of the so-called 'Black Economy'- this refers to unrecorded income where a good or service is provided and the cash payment is not declared officially.

4. There is an important distinction between national and domestic income (and product). Total domestic income, is obtained from the addition of the various factor incomes. Total domestic income is converted into Gross Domestic Product by subtracting stock appreciation, which results from inflation and is not a reward to a factor of production.

5. A residual error is then added to make the estimate for GDP obtained by the income-based method equal the estimate of GDP obtained by the measurement of expenditure. The decision as to where in the national accounts to include a residual error is essentially arbitrary. Although, conceptually, national income must equal national product and expenditure, the national income statistics are only estimates of what has happened in the economy. Mistakes in data collection inevitably occur, so a residual error or 'mistakes item' must be inserted in this table to ensure its equality with the expenditure table.

6. Thus Gross Domestic Product (GDP) at factor cost is a measure of the incomes received by factors of production through employment in the economy. GDP is not the same as Gross National Product (GNP) because part of the domestically generated incomes may flow overseas to foreign owners of companies operating in the country. Similarly, citizens living in the country may receive incomes in the form of dividends and other profits remitted on assets they own abroad. GDP is converted into GNP by adding the

Net Property Income from Abroad which results from such dividend flows.

Finally, the estimate for National Income (or Net National Product) is obtained by deducting capital consumption or depreciation from Gross National Product.

3. The Expenditure Approach

This method depends upon the fact that incomes are earned only when someone spends - ***'one man's spending is another man's income'***. Adding together all expenditures by households and firms will not, however, provide a measure of the national income since it is only expenditures on final goods which are relevant. All intermediate spending must be excluded. In the case of the public sector, only public spending on goods and services can be included - we must not include that part of public spending which takes the form of pension payments and other transfer payments.

If expenditures are recorded at ***market prices***, it will be necessary to make a deduction equal to the value of the ***taxes*** levied on goods and services. ***Indirect taxes*** (taxes on expenditure) ***inflate*** the money values of goods and services and in order to arrive at a factor cost evaluation it is necessary to ***deduct*** such taxes from the market price values. Some items such as food and housing are sold at prices which are lower than factor cost values, because they are subject to government subsidies. The value of ***subsidies*** should, therefore, be ***added*** to total expenditure in order to obtain the factor cost values of national output.

It is also necessary to take account of the value of the physical increase in stocks, and an imputed expenditure is included for this item.

The spending by foreigners on home produced goods (i.e. ***exports)*** must be ***added*** to total domestic spending. Correspondingly a ***deduction*** must be made for that part of domestic spending which is devoted to ***imports***.

The total expenditure account must also be ***adjusted*** in respect of property income earned abroad and property income paid abroad since the expenditure items will not include this income and we must finish with a total which is equal to national income.

The expenditure approach to measuring GNP, measures the expenditure flows for goods and services purchased by households, firms, the public sector (Regional, District and Central) and net expenditure flows from the international sector. In order words, this approach treats GNP as a measure of aggregate output.

In the calculation of national product, final products are classified into four categories:

a. Personal consumption expenditure, C
b. Government expenditures for goods and services, G
c. Gross private domestic investment, I and
d. net exports i.e. exports minus imports (X - M).

A. PERSONAL CONSUMPTION EXPENDITURE (C)

Consumption is the ultimate objective of economic activity. That is, we work and produce so that we will have goods and services to consume. Personal Consumption constitutes the largest component of national product. They may be divided into three main components.

(i) Durable goods such as cars, washing machines, appliances, etc.
(ii) Non-durable goods such as food, clothing utilities, such goods are consumed in short- periods of time and generally do not last from one year to the next.
(iii) Services, such as haircuts, repair and maintenance services, medical care etc,

B. GOVERNMENT PURCHASE OF GOODS AND SERVICES (G)

Consumer goods and services are not the only things produced in the economy. The government hires teachers, educational services are produced. The government spends money for road repairs; better roads are produced, public buildings are produced etc. Government, at all levels - National, Regional, District and Local, undertakes expenditures for the public good.

While government expenditure on goods and services (G) are included in the national product, transfer payments are not. For instance, when the government buys an aeroplane, the aeroplane is produced, but when the government makes transfer payments - such as Social Security payments to retired personnel - the recipients are not required to produce anything in return. Therefore, government's expenditures on aircraft are included in national product but transfers payments are not.

C. GROSS PRIVATE DOMESTIC INVESTMENT (I)

Gross private domestic investment or gross investment includes investment expenditures by households and firms. Investment expenditures differ from consumption expenditures in that they are expenditures for goods that give firms and households future benefits which generally extend over a period of time.

Private domestic investment (I) includes three categories.

a. Business investment in plant and equipment.
b. Residential construction, and
c. Changes in inventories.

(a) PLANT AND EQUIPMENT

This category includes the construction of factories, warehouses, stores, and other non-residential structures used by businesses, and acquisition of machinery and other equipment.

(b) RESIDENTIAL CONSTRUCTION

The construction of residence is included in the investment segment of national

product. This is because an apartment building, like a factory or machine is intended to be an income producing asset. In future years, the apartment building will produce shelter, for which the owner will charge rent.

There is a substantial advantage in treating all residential construction similarly in the national product accounts. When housing of any kind is built, families have shelter; this is true whether they rent the new housing or own it. For consistency, construction of new owner-occupied housing is included in the investment category. More specifically national product accountants treat owner-occupied housing as if the family had originally invested in the home and then, in future years, rented the house to itself. Note that houses are treated differently from consumer durables such as refrigerators. Houses are included in investment; refrigerators are part of consumption expenditure.

(c) CHANGES IN INVENTORIES

We have learned that what goes into bread is not counted separately in the national product because its cost is included as part of the total cost of bread, and is accounted for in the price of bread. But how about any flour we produce above and beyond the amount consumed in bread and pastries? What happens to it? The answer is that it is either exported or it is used to build up our inventories of flour. Any such increases in our stocks of flour represents something we have produced this year. Therefore, they are included in this year's national product.

As a first approximation, national product is found by adding up only expenditures on final products. That is an acceptable and commonly used generalization. It is 99% right but it is not precisely accurate. National product includes not only final products in the form of consumer goods and services, government purchases, and equipment and buildings. It also includes intermediate product that have added to inventories. The precisely correct statement is perhaps emphasized in the following statement.

We should measure all goods and services once and only once.

Change in inventories can be either positive or negative. In a bad crop year, there may be less maize on hand at the end of the year than at the beginning. We have taken more out of our stocks than we have put back in. In this case, changes in inventories are negative, and they are subtracted in measuring national product.

As defined in national income accounts, investment does not include the purchases of financial securities (stocks and bonds) or deposits in saving accounts. These transactions simply transfer cash into other financial assets. They add nothing to the stock of housing, plant equipment, inventories or other forms of capital used in production.

D. NET EXPORTS OF GOODS AND SERVICES

The final component of GNP from the expenditure side is the net exports or the balance of trade, from the international sector. When foreign buyers purchase Ghanaian exports, their payments to Ghanaian sellers enter our expenditure stream and add to our GNP. When a Ghanaian buyer pays a foreign seller for imported goods, these expenditures leave our income stream and diminish GNP.

Net exports or balance of trade, is simply the difference between export and import expenditures or exports (X) minus imports (M). This shows the net effect of the international sector on the domestic GNP.

Adding consumption, gross investment, government purchase and net exports together gives us GNP by the expenditure approach. In symbols this is written:

National product = C + I + G + (X - M).

Real national income and money national income

The measurement of the national income must be carried out in terms of money values. The flow of output is measured by multiplying the volume of goods and services produced by their prices and this gives us the total money value of output. But using money as a measuring device gives rise to serious problems when the value of money itself changes, that is, when prices change. When measuring changes in the National Product from year to year, it is important to know what part of the increase is due to growth in the physical quantity of output and how much is due to changing prices.

National income statistics are used extensively for making comparisons over time and we want to know whether national income is increasing or decreasing in real terms - for it is real output which determines the standard of living. For this purpose it is necessary to make some adjustment to the money values of national income so that they can be compared in real terms.

PROBLEMS IN MEASURING GDP

No matter how thorough the officials try to be, estimates of GDP figures do not capture the total value of output of the entire economic system. The following are some problems in estimating GDP:

1. **Changes in Prices:** If prices are rising, GDP estimates would look larger, although the total physical output remains the same or even decreases in volume. By the same logic, if prices are falling, physical output could be much higher but GDP figures may look less than before.

2. **Estimating output in the informal sector:** There is not enough information about the

activities of the informal sector and, therefore, it is difficult to estimate its value of output.

3. **Changes in quality over time**: GDP estimates do not include changes in the quality of products and services. For example, the rapid advance in technology has vastly improved the quality of television sets, video cassette recorders, cameras, personal computers, food, clothing, household items and many others.

   Meanwhile, the prices of these items and several others have either been relatively stable or have fallen a great deal. If the quality of items could properly be assessed in financial terms, then GDP figures would be higher. If the quality of items is falling, GDP estimates would be lower.

4. **Self-reliant activities:** The two related aspects of these are:
   (a) *Household services by wives:* Wives produce various services that include: food processing, fetching water from considerable distances (particularly in the rural areas), washing clothes, collecting firewood or other forms of fuel, maintaining small patches of vegetable gardens %for items of the soup they prepare for family consumption, raising children and several more. However, because they receive no wages, their contributions are normally not included in estimates of GDP.

   Meanwhile, the contribution of housemaids is included in GDP estimates. Ironically, when a maid gets married to her former employer and probably would now be more productive as a wife, her contribution would cease to be part of the nation's GDP.

   (b) *People taking care of themselves:* If you normally wash and iron your clothes, cook for yourself, bath yourself, etc., the service you are providing to yourself would not be part of the GDP of your country. However, if you employ a worker to take care of your laundry, a cook, a nurse to bath and care for you, etc., their contributions would be estimated and added to the nation's GDP.

   Estimates of GDP would be lower for a country where most people take care of their needs. However, if most people in an identified country were to use the market for most of their household needs, e.g., laundries to wash their clothes, eat from restaurants, firms to come and clean their homes, etc., GDP estimates would be higher.

5. **The Effect on the Environment:** Environmental pollution causes GDP figures to be higher than without these adverse factors. Lets us look at a few examples:
   (a) If dust from construction projects causes people to get more ill, the contribution of the doctors and the contractors would be included in the GDP, but there would be no deduction made for the effect of the pollution that the contractor caused (i.e., illness, people having to regularly paint their houses, etc.).
   (b) A textile mill located upstream on a river causes pollution that forces those downstream to treat the water, so as to make it safe for household use. Estimates of GDP would include the value of output of the textile mill and the services linked to

treating the water. However, there will be no deductions from GDP for the adverse effects of the pollution.

(c) People who work very hard are likely to have more cases of hypertension, heart and other diseases caused by all forms of increased stress. Their output will be part of GPP and so will their additional expenditures for medical care. However, there would be no deductions from GDP for the adverse effects on their health.

In all of these and many other cases, the same economic system would show a relatively lower GDP if there was no pollution and illnesses caused by it.

6. **Crime:** Crimes of all types are employed to generate income and wealth. GDP figures include the value of goods and services created through crimes, if these items and services are sold in the market. However, GDP will not include the results of many criminal activities that earn incomes for those involved in them. Meanwhile, many criminals use legitimate and respectable economic activities to hide their other illegal undertakings. Of course, the results become part of GNP.

Economic analysis has developed tools that partly solve the following two of the problems mentioned above: (a) The impact of changes in prices and, less effectively, (b) That of income distribution, as discussed in the following section.

SOLUTION TO THE PROBLEM OF CHANGES IN PRICES

The method of measuring output at market prices gives us an estimate of nominal GDP. This is because we are using the current prices that are revealed in the market for the items. If prices were stable and, therefore, neither increase nor decrease from one year to another, there would be no problem in estimating the true value and rate of growth of production from year to year. Under conditions of stable prices, an increase in GDP would mean a real increase in the volume of physical goods and services that have actually been produced.

Let us assume that we have had a period of price deflation, because most prices have decreased rapidly. Estimates of GDP based on only the market prices of the items would be low and incorrectly state the output by the economy during this period.

In contrast, during a period of inflation, most prices would be increasing very fast. Under these inflationary conditions, any nominal estimates of GDP would be increasing, even though the economy might be producing the same or even fewer volumes of goods and services.

Real GDP is an estimate of the value of national output that removes the effect of changes in price levels. The following are the steps that are taken to achieve this real estimate:

1. A year that has already passed is selected as the base year or the point of reference. This

should be a year that was normal and did not have unusual events, e.g., floods, earthquakes, exceptionally excellent output, etc. The level of prices of the items in GDP for this base year is estimated and given the number 100 per cent or simply 100. The price level of this base year is then used in comparing with increases or decreases in price levels that might have taken place during later or even earlier years. In Table 5.1, the base year is 1988. Usually, this base year is between 5 and 10 years earlier.

Table 5.1 Nominal and Real GDP (1988 = 100)

	1988	1989	1990	1991	1992	1993
Index of nominal GDP	100.0	120.0	144.0	172.8	207.4	290.4
Retail price index	100.0	130.0	182.0	273.0	300.3	330.3
Index of real GDP	100.0	92.3	79.1	63.3	69.1	88.0

A base year that is closer to more recent times is better for use in comparing and finding out what has been happening to real GDP in later years. A base year that is too distant into the past is of less use. For example, if a base year of 1810 is used, this would be useless for people living in 1995. Many new products and services have since been created which did not exist in those more ancient days. Moreover, most of those alive today would not have lived that long for the comparisons to make any sense to them.

2. After selecting a base year, the next step is to find out what has been happening to prices in later years for the same items in the GDP. Have prices in general been rising or falling? If so, by how much? Through statistical techniques that tell us whether consumers are paying either more or less for the same items, a retail price index is estimated. (The plural of price index is price indices). Table 5.1 tells us that, if we use the level of prices in 1988 as our base or point of reference, those in subsequent years rose by 30 per cent between 1988 and 1989, 82 per cent between 1988 and 1990 and three times higher in 1992 than they were in 1988 and so on. Meanwhile, the rate of price changes between each year and the next is different, as the student can work out to discover this for himself or herself.

   Out of the several price indices that may be used, the *Retail Price Index* (RPI) is more common. This is because most of the buyers or spenders in any country are active at the retail market level. They include all the important ones: households, firms and the government.

3. The next step is to remove the influence of changes in prices, so that we can arrive at an estimate of *real GDP*. If the general price level has been falling in relation to a base year, we use a GDP *inflator* that would help make the GDP estimate larger. However, if prices have generally been rising, as in the example used in Table 5.1, we use a GDP *deflator* to make the GDP estimate smaller. This deflator is got through any of two methods:
   (a) Divide the index of nominal GDP by the index of real GDP and multiply the result by 100;

(b) Divide the index of nominal GDP by the retail price index (RPI) and multiply the result by 100.

This second method is what has been used for the data in Table 5.1, since we do not have the actual figures of nominal and real GDP. Therefore, to get the respective real GDP figures, we multiply the nominal GDP figure for each year by its index of real GDP or deflator (i.e., the last row of Table 5.1) for that specific year.

PROBLEM OF THE DISTRIBUTION OF GDP

The estimate of real GDP for any country is only a number. Suppose the GDP of country A is twice that of Country B. While concentrating on only the amounts of GDP and without using any additional information, it is tempting to conclude that the people of Country A have a higher standard of living than those in Country B. However, when we divide the GDP of each country by its population, we arrive at average GDP figures which might show that the highly populated Country A a much poorer place than Country B. Average figures of this nature, referred to as GDP per capita, still do not tell us about the actual share of the GDP that goes to each individual in that country. They are just numbers.

An estimate of GDP per capita can be used to examine the progress of a single country over a period of years. The economists of Country A might wish to know how the current economic performance of that country compares with what was the situation for the past 10 years. Here, they would compare the GDP per capita for each of these years that interest them. However, the more distant we go back in time, the less meaningful these comparisons are. The reason is that countries keep producing new items that did not exist in previous times. For an example, radio and television did not exist 200 years ago.

The actual income distribution can be so highly skewed that most of this GDP goes to a small group of fabulously wealthy families. Meanwhile, the mass of the population receive much less and are very poor. Alternatively, most of the GDP may be in the hands of the government which may use this for waging wars or for building pyramids or other monuments. Under these conditions, the results of most of the productive effort of the country would not be available for the enjoyment of the population. However, despite the very crude nature of this type of measurement by averaging, it is better than having none at all.

THE DIFFERENCE BETWEEN GDP AND GNP

The GDP for a country is a monetary estimate of the total of goods and services that have been produced during a specified period, usually a year. Part of this total remains as income for the residents. The residents in a country include citizens and non-citizens. Part of the GDP belongs to sources outside the country who contributed toward the production for that year. Meanwhile, the residents are also entitled to receive their share of contributions to the output of other countries. Therefore, the following two types of estimates are made:

1. Estimates of these transfers to sources outside the borders of a country are subtracted from the estimated GDP.
2. Estimates of transfers from abroad to residents in the country are added to the estimated GDP.

The figure we get through these subtractions and additions is called the Gross National Product (GNP).

While Gross Domestic Product (GDP) is an estimate of what was produced within the domestic borders of a country, GNP is an estimate of the value of goods and services available for use by those resident in that nation. The adjective "national" should remind us about the significance of GNP. For the same reasons, the GNP figures of Nigeria, for example, would include payments received by those living in that country who have made economic contributions to other countries, e.g., Cameroon, Ghana, Germany or the U.K. during the specified period.

If we chose to use the income approach for these estimates, the related terms would respectively be Gross Domestic Income (or GDY) and Gross National Income (or GNY). In these types of national income analysis, economists use the letter "Y" to represent income. Meanwhile, before we know the amount of income that actually reaches the individuals within a country, there are a few additional accounting procedures that must be undertaken. These include:

1. Deductions of taxes, and
2. Additions of transfer payments. Transfer payments include subsidies, pensions, social security and other payments. Those who receive these payments are simply entitled to them. These monies do not result from the production of goods and services during that specified period.

THE PURPOSE FOR ESTIMATING GDP OR GNP

The major reasons for estimating these national accounts include the following:

1. MEASURING ECONOMIC GROWTH. As these figures are a measure of economic activity, the annual national income can be compared with previous years and an impression is thereby gained about changes in the standard of living. Indeed, economic growth rates are worked out from these accounts.
2. COMPARING COUNTRIES. Apart from comparisons across time, these national accounts also offer opportunities to make comparisons between countries in terms of development, affluence, policies, and so on. In fact, contributions to international

agencies such as the IMF, Red Cross, World Bank, African Union and ECOWAS are often assessed as a percentage of a country's GNP.

3. GOVERNMENT PLANNING. The statistical tables on expenditure, output, and income provide an important analytical tool to those economists who are involved in recommending and evaluating policies on behalf of government.

4. EVALUATION OF ECONOMIC CLIMATE. Similarly businessmen, research students, trade union representatives, and journalists involved in interpreting economic trends will find the statistical breakdowns provided in the various tables most useful for their forecasts and work in general. For example, in advanced economies like the UK, GDP output estimates are announced quarterly during the year and are regarded as a good short-term indicator of economic prospects. The average GDP figures, however, are recognized as more reliable for forecasting over longer time-periods.

In addition to the above, an estimate of the productive capacity of a country reveals information that may serve the following purposes:

1. **Capacity for national mobilization of resources:** The leaders and the population may wish to know the economic capabilities of their country to switch resources from one type of use to another. For example, a highly productive economic system would have greater capacity for effectively and speedily organizing scarce resources for relief during natural disasters such as droughts, hurricanes and earthquakes, disease epidemics, for war or for defence, as compared with another economy that is relatively poorer and, therefore, less productive.

2. **Potential for aggression, domination or defence against it:** Relatively stronger nations have historically tended to snatch the wealth of relatively weaker ones, such as happens under colonialism. This concern about the chances of losing wealth or the need to mobilize for its protection creates interest in information about the GDP of a nation. These estimates allow people to see how the economic strength of a country compares with those of others.

3. **Potential for trade:** Countries with high GNP figures have potentially enormous buying power and, therefore opportunities for trade, as compared with countries that are poorer.

4. **Monitor promises of the government:** The economic development plans that governments produce have various promises built into them of economic growth, development and improved welfare for the benefit of the affected populations. GDP figures can be used to confirm the success of these efforts or even to find good excuses for failure.

5. **Requirements of membership in international organizations:** Membership in the International Monetary Fund (IMF), the World Bank and similar development financing institutions obliges a country, among other demands, to provide GDP and related data to these institutions.

6. **Requirements of "foreign aid" donors:** Countries seeking assistance in terms of finance and other resources from various countries and development financing institutions have to produce evidence of effort in the direction of economic growth and development. GDP and other related data are usually essential for the necessary discussions and negotiations.

Difficulties Comparing Countries' Accounts

A country's national income figures largely reflect what is recorded. In different countries official interpretations of what is eligible for recording changes according to circumstances. For example, the attempts to prohibit alcohol in the United States in the 1920s led to a large illegal bootlegging industry. This replaced a former legitimate industry, and national income figures were affected accordingly. Similarly, 'prostitutes' in those countries where they are state organized will provide an economically measurable service, whereas in other countries this will not be the case.

Not only do laws affect the figures but so does accounting convention. For example, in the US government statisticians add to their GNP figures an estimated amount for those foods which farmers have grown and their families have eaten, i.e. those foods that inevitably do not pass through a market-place. In contrast, self-sufficiency in the Third World represents a major form of existence yet these self-consumed products normally remain unrecorded for official purposes.

These problems are further compounded when there is the need to express world national income figures in a common currency, as this brings in problems of exchange rates. The $ and £ values, which are normally used for international comparisons, alter daily against other currencies. Therefore converted figures from the currency of measurement to the common currency are often suspect.

National Income as a measure of Welfare

We have presented in this chapter several measures of economic activity and obviously each measure has a different purpose. This raises the question, however, do any of them effectively measure well-being?

The critics of national accounting contend that it glorifies the materialistic society in which we live. They believe that the numbers cannot capture our true overall well-being as a nation. They point out that many forms of economic activity also produce external costs, such as pollution, noise, and accidents. These are not officially measured within national income, but they do affect welfare. Similarly, leisure, happiness, and health cannot be measured simply in terms of income, output, or expenditure.

THE USE AND MISUSE OF NATIONAL INCOME STATISTICS

Since national income statistics are the main source of data on what has happened and is happening in the economy, they are frequently used as indicators of economic growth, economic and social welfare, and for purposes of comparison with other countries. We have already mentioned some of the various problems in the construction and use of national income statistics, particularly the distinction between money and real national income, and the problem of imputing or excluding the value of activity in the non-monetized sector of the economy. We shall now summarize the most important problems which arise in the use of national income statistics.

1. Comparisons over time

(a) Money national income is a misleading indicator of economic growth. For the growth rate to be calculated, money national income for each year, expressed in current prices of that year, must be deflated to show real income in the constant prices of a single year. An index number, such as the Retail Price Index, used to deflate GNP to constant prices is known as a GNP deflator.

(b) Population usually grows over time, so real GNP per head of population (per capita) is a better indicator of living standards than the aggregate real GNP figure.

(c) The quality of goods and services available is likely to change over time, presenting a particularly difficult problem in the use of GNP statistics.

(d) More generally, the GNP figures cannot measure changes in intangibles, which affect the quality of life and the general level of welfare in society. Externalities, including both external benefits and costs, usually escape measurement in national income statistics, as do such intangibles as the value people place on leisure time and living close to work. When externalities are measured, what is in effect a welfare loss may appear as a welfare gain! For example, if motorists spend more time each day sitting in congested traffic, they will regard this as a welfare loss. However, as far as the national income statistics are concerned it will appear as extra consumption expenditure on the outputs of the vehicle and petroleum industries.

2. Comparisons between countries

(a) Comparisons of GNP per head between countries are misleading if the relative importance of the non-monetized economy is greatly different.

(b) Further problems occur in the comparison of real income per head if different commodities are consumed. For example, expenditure on fuel, energy and building materials is likely to be greater in a country with a cold climate than in a warmer climate.

(c) A reliable comparison of real GNP per capita requires the accurate deflation of money GNP figures to constant prices in each country. There are considerable differences in statistical method and sophistication between countries, in the construction of both national income accounts and price indices. In addition, artificially managed exchange rates may distort comparison of internal price levels within countries, and even if exchange rates reflect the prices of goods which are traded internationally, they will not reflect the prices of goods and services which do not enter into international trade.

CASE STUDY

National Income Accounts: Measurement or Mirage?

Given the deficiencies in our national income accounts, is it possible to come up with a new measure of GNP? Ed Mishan, a former professor at the London School of Economics, would sincerely hope so. There follows an edited extract from an article of his that was published in November 1984. This will prompt some interesting questions relating to the measurement of economic growth and welfare ...

Role of women

Let us turn first to the increased participation of women in the workforce over the last thirty years which has increased output in the private and public sectors of the economy and to that extent has increased the estimated growth in real GNP and also in per capita real income. A good part of this apparent contribution to the GNP statistics is, in an economic sense, fictitious. For while the services that women now provide for industry and commerce continue to add to the value of GNP, the concomitant reduction of services they would otherwise have provided in their homes - which on proper economic accounting would enter as a deduction from the nation's aggregate of finished goods - is ignored in the GNP computation.

Public sector versus private sector

Second, since public goods tend to be overvalued as compared with those produced by the private sector, and since the output of the public sector over the last thirty years has grown appreciably as a component of GNP, it follows that the real growth of GNP over the period will be overestimated.

Military expenditure

Third, military expenditure which is one of the largest items of public expenditure, raises another interesting question. Allowing that real military expenditure per capita has grown enormously since the turn of the century, should proper economic accounting include it as an increasing component of per capita real income?

Exploitation of irreplaceable resources

Fourth, an increasingly significant source of error arises from the global exploitation of irreplaceable resources. If the total stock of capital is taken to include not only man-made

capital but also 'nature-made' capital such as fossil fuels, mineral reserves, ocean fisheries, tropical forests etc., it is entirely possible for current rates of global consumption to be reducing the stock of nature-made capital faster than it is increasing the stock of man-made capital, which implies that we are currently consuming beyond our real income- in effect, eating into the total capital we have inherited to the detriment of our future and our children's future.

Environmental considerations

A fifth factor related to the preceding one is the propensity of modern industry and its products to pollute air, soil, and water and generally to degrade the environment, which acts to reduce real income below the official figures. If, to begin with, nothing is done to curb the industrial overspill which damages the health and amenity of people, GNP is overstated to the extent of the cost of the damage that is borne - this being the value of the 'bads' that accompanies the production and distribution of the goods.

Concluding thought

If these and other deficiencies in the conventional methods of estimating changes in GNP were recognized, and allowance made for them, the real standard of living in the West as compared with that of other 'less-developed countries' would look much less impressive.

Source: E. J. Mishan, 'GNP - Measurement or Mirage', National Westminster Bank Review, Nov. 1984.

Questions

1. Mishan's statements imply a need for recording minuses as well as pluses to national accounts. What do you think should be taken off national accounts to arrive at a real measure of progress?

2. Professors Tobin and Nordhaus in a similar article in an American publication argue that there is also a need for adding activities that are not traditionally included in GNP figures. List the kind of things you think they may have in mind.

EXAMINATION PREPARATION

MULTIPLE CHOICE QUESTIONS

1. Which of the following statements is correct?
   (a) Two countries with the same total National Income will have roughly the same living standards
   (b) Services provided free to the public, such as police work and state education, are valued at opportunity cost in the National Income Statistics
   (c) Official statistics might over-estimate the National Income for a country with a strong black economy
   (d) Gross National Product figures are often used in preference to Net National Product figures because of difficulty in calculating capital consumption

2. Which of the following items is not included in the calculation of Gross National Product at factor cost?
   (a) the cost of building new government offices
   (b) value added tax on business services
   (c) dividends received from shares in a company abroad
   (d) imputed rent of owner-occupied houses

3. Which of the following are excluded from national income accounts?
   I. expenditure resulting from earnings in the black economy
   II. student grants
   III. income from an individual from selling a second hand car
   (a) I only (b) III only (c) I and II only (d) II and III only (e) all of them

4. Which of the following responses below shows two terms which are synonymous (i.e. mean the same thing
   a) factor cost and current prices
   b) current prices and constant price
   c) stock appreciation and physical increase in stocks
   d) investment and capital consumption
   e) depreciation and capital consumption

5. International comparisons of national income statistics can be unreliable because:
   I. the method of calculating national income varies between countries
   II. exchange rates may not reflect differences in domestic purchasing powers of currency
   III. some economies will contain many self-contained units which market little of their output
   IV. rates of inflation vary between countries
   (a) I and II only (b) II and III only (c) III and IV only
   (d) I, II and III only (e) all of them

Solved Questions

Question 1:

In each of the following cases, explain the distinction between the two concepts used i national income accounting:

(i) Gross domestic product at factor cost; gross domestic product at market prices

(ii) Gross domestic product at factor cost; gross national product at factor cost

(iii) Gross national product at factor cost; national income

(iv) Total domestic expenditure at market prices; gross domestic product at market prices

(v) National income at current prices; national income at constant prices

Solution:

(i) GDP at market prices = GDP at factor cost + indirect taxes - subsidies

(ii) GNP at factor cost = GDP at factor cost + net property income from abroad

(iii) National income = GNP at factor cost - depreciation

(iv) GDP at market prices = TDE at market prices + exports - imports

National income at current prices: each year's national income is measured at that year's price level. National income at constant prices: each year's national income is deflated to the constant prices of a single year, by means of a price index (national income deflator).

Question 2: *The GDP figures are just numbers: discuss.*

Solution: Some points to consider in this exercise include the following:
After the figures of GDP have been estimated, they really are just numbers. These numbers do not reveal:

1. **Composition of Output**: The composition of output is very important. If most of the GDP is for goods and services that are used for war, the soldiers may be happy. However, civilians would have very few goods and services on which to spend their money. A good proportion of the GDP of Ancient Egypt must have been spent on building enormous pyramids for burying dead Pharaohs (who were even provided with boats, slaughtered slaves, clothes, food and other items to serve them in the next world). The proportion of GDP left must have been less, in the form of goods and services for the consumption and welfare of the living.

Some observers believe that one out of many modern examples of this type of distortion in production was that of the former Soviet Union. Its critics allege that the composition of its GDP favoured war, prestige and security-enforcing goods and services rather than of consumer goods. The emphasis was on items for suppressing the population and denying them of their human rights. The subsequent revolt and disintegration of that empire was meant to restructure the composition of GDP to favour consumer goods and improved welfare for the population.

2. **Income Distribution:** The GDP figures do not tell us about how that income is distributed within the population. Therefore, if the GDP of a country is increasing very fast, this would not necessarily mean that the material well-being of most of the population is also increasing. The few rich may be getting fewer and ever richer while the poor may be increasing in their percentage of the population and in poverty.

3. **Leisure:** The value or the opportunity cost of time that people take off by choice, just to stay away from working is not included in GDP figures. Most people enjoy leisure, whether this is spent in having fun at festivals or in just being idle.

GDP figures may succeed in including some information on leisure activities, e.g., the equipment and items that are bought or rented for recreational purposes and monies spent by those who patronize cinema houses, dance halls, health or physical fitness clubs and other services. However, we know that when individuals deliberately take off time away from working, e.g., for vacations and idle enjoyment, they are expressing a choice that leisure is an economic item for them and is temporarily preferred to the money they would have made during that period.

Throughout history, countries that have been highly productive of material goods have also been equally productive of leisure or idle time, vacations, more entertainment and festivals. Leisure is important for human psychological and physical health. People work so as to be able to afford the enjoyment of leisure, just as they work for- money and other material goods.

Question 3:

To what extent would you consider GNP as a measure of economic welfare?

Solution - Some points to consider in this exercise include the following:

Real GNP is one of the most frequently used measure of economic performance and welfare and large changes in GNP may in fact reflect severe problems or impressive gains. When a nation's real GNP falls by say 30%, the performance of its economy is regarded as unsatisfactory. On the other hand, the large increase in real GNP reflects a rapid rise in the material standard of living.

Yet real GNP cannot be taken as a precise measure of the standard of living. The most obvious difficulty arises because an increase of say 10% in real GNP does not mean that the average person has 10% more goods and services. The reason is that population is growing, rather than using total GNP figures, it is appropriate to estimate changes in the standard of living by looking at real GNP per capita; that is, real GNP divided by the population. Per capita real income is therefore the average output of final goods and services per person or ratio of GNP over population.

Pattern of Income Distribution: If come is very unevenly distributed among persons in a country, real GNP and even per capita real income does not tell us much about the living standard of the average person in a country.

Associating economic welfare with a particular pattern of income distribution requires a normative value judgement at some point. To say that greater equality or inequality of income distribution is more equitable or better requires some normative standards of equity.

Composition of GNP: The types of goods and services produced obviously affect the community's economic welfare and standard of living. Suppose that two countries A and B have the same real GNP per capita and the same pattern of income distribution. However 70% of A's GNP is made up of heavy industrial machinery and military goods while 70% of country B's GNP is made up of consumer goods, obviously households in B will have higher living standards than those in country A.

Similarly, the relationship between growth of GNP overtime and increases in community economic welfare and living standards depends heavily on the types of goods whose output is growing the fastest. For example, the Soviet Union experienced dramatic increases in GNP between 1928 and 1953, but living standards did not grow proportionately because the growth of GNP was accomplished by squeezing the production of consumer goods to produce more heavy industrial equipment.

GNP and Gross National Cost: The value of goods and services produced and therefore GNP, depends on costs of producing goods and services. The value added at any stage of production also reflects the cost incurred at that stage of production. In other words, we can think of GNP as a measure of the costs borne by society in producing goods and services some of which never enter the GNP calculations.

Production and consumption of goods impose external social costs on the community.

External Social Costs: are costs of production and consumption of goods borne by persons not directly involved in their production or consumption. For instance environmental pollution is one of the most serious forms of external social cost.

Building a nuclear power plant increases the output of electric power for consumers and provides more electricity to be used in production of the goods, but it also contributes to the pollution of surrounding bodies of water as the heated water from the power plant is

discharged into lakes and rivers. These are external social costs borne by society, but they do not enter into the cost calculations of firms or into the final value of goods and services.

In other words, by excluding social costs, GNP and the measure of income related to it, tend to understate the costs borne by society in producing its annual output of final goods and services.

Question: *Briefly explain how the Value Added problem is accounted for when measuring national income.*

Solution:
This problem is encountered as we try to measure national income via the Output Approach. If we add the values of the outputs of all productive enterprises, our final total will greatly exceed the national income. For example, the sum of the values of the outputs of iron ore producers, steel producers and motor car producers would contain the value of the iron ore content of the motor car three times and the value of the steel content twice. This problem is usually described as double counting. This is because the value of a final product 'embodies' the values of the outputs of the intermediate stages.

There are two possible solutions to this problem. We must either:

(a) take the sum of the values added at each stage, or

(b) take the values of the final products.

Both methods must result in the same total, as the simple example below demonstrates.

Stages of production	*Sales*	*Purchases*	*Value added*
Landowner (sells trees)	50	0	50
Timber producer	100	50	50
Furniture producer	200	100	100
Furniture retailer	250	200	50
			250

RELATED ESSAY QUESTIONS

1. What is the difference between Gross Domestic Product (GDP) and Gross National Product (GNP)? Would this difference be large or small for a developing country? Defend your stand and give examples.

2. Use five problems in estimating GDP for an African country and explain why you consider them to be problems.

3. Describe three types of information that GDP or GNP estimates do not tell us.

4. What major problems arise in estimating national incomes in underdeveloped countries? Relate your answer with reference to an African or some other developing country.

5. Let us assume that there have been increases in the per capita income of a country over a period of five years. Does this mean that there have also been increases in the standard of living of most people in the population?

6. What methods are used by economists for comparing the standards of living between countries? Discuss the shortcomings of one of these methods.

7. List and discuss five reasons why countries keep estimating their GDP.

8. What are some major economic problems, when we compare estimates of income per capita figures for two or more countries?

CHAPTER FIVE

AGGREGATE SUPPLY AND AGGREGATE DEMAND

INTRODUCTION

In our study of microeconomic theory, a model of price determination using supply and demand analysis was given, but the prices that we were referring to were individual commodity prices relative to all other prices. Concern over prices at the economy-wide level is much more general, for it is a concern about why there have been continuous increases in the price level, or why there has been inflation. We have noted that the rate of inflation has varied dramatically over time. We also found out that we have had varying periods of growing prosperity and recession, with accompanying periods of expanding employment and then unemployment.

We have to construct a model in our attempt to explain variations in economic growth and rate of inflation. We will use the tools of supply and demand but with a major change: instead of looking at the price of one commodity, we will look at the price level (an index of general prices) and how it relates to aggregate demand and aggregate supply.

The definition of **aggregate demand is the sum total of all planned expenditures in the economy.**

The definition of **aggregate supply is the sum total of planned production in the economy.**

Given the above definitions, we can proceed to construct an aggregate demand curve and then an aggregate supply curve.

The Aggregate Demand Curve

The aggregate demand curve, AD, gives **the total of all goods and services demanded at various price levels.** Otherwise stated, the aggregate demand curve gives the relationship between the total amount of income, or real national output that will be purchased, and the price level. Real national income consists of the output of final goods and services in the economy - it is everything that is produced for final use, either by firms or households.

Look at Figure 5.1 On the horizontal axis is measured real national income. On the vertical axis is measured the price level. At a price level of P_1, aggregate demand will be Y_1 - At a price level of P_2 aggregate demand will decrease to Y_2. The higher the price level, the lower will be the total real output demanded by the economy, and vice versa

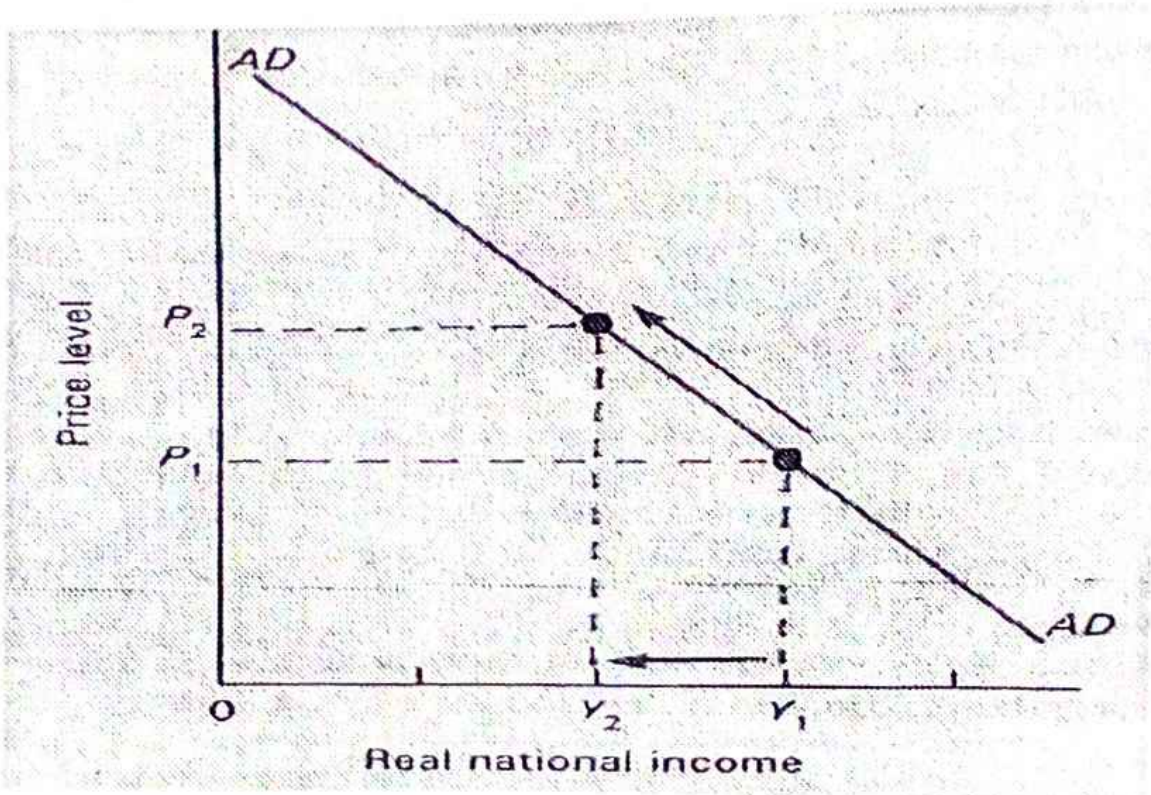
Figure 5.1

The Aggregate Demand Curve. On the horizontal axis we measure real national income. On the vertical axis we measure the price level. The aggregate demand curve (AD-AD) is downward sloping for three reasons:

(1) an increase in the price level increases interest rates, which decrease the quantity demanded of interest-sensitive goods, such as cars and factories;

(2) an increase in the price level reduces the real wealth of all individuals holding cash, thereby causing them to want to spend less; and

(3) an increase in the price level causes us to buy more imports and sell fewer exports therefore reducing the demand for real output in the country. Therefore, at price level P_1 real national income demanded will be Y_1, but when the price level increases to P_2, real national income decreases to Y_2, other things being equal.



Why the Aggregate Demand Curve Slopes Down

We cannot explain the downward-sloping demand curve for all commodities in the same way as we explain the downward-sloping demand curve for individual commodities. After all, a change in the price level changes the price of all goods and services, on average. It is important to remember that demand and supply analysis in the aggregate is different from microeconomic analysis, despite some parallels.

Because the aggregate demand curve expresses the relationship between spending and prices in general, we must look more deeply at the impact of changing prices on spending, to see why they are inversely related. The reasons include the following:

1. Interest rate effects
2. Wealth effects
3. Substitution of foreign-produced goods

1. Interest Rate Effects

When we discussed inflation, we pointed out that one result of inflation is a rise in nominal interest rates because inflationary premia are added to all interest rates. But a rise in interest rates will reduce the quantity demanded of interest-rate-sensitive goods. These goods are those that must be financed by borrowing, such as cars, homes and new factories. Thus the link is as follows:

Price level up → Interest rates up → Quantity demanded of interest-rate-sensitive goods down → Total real income (production) falls

2. Wealth Effects

An increase in the price level reduces the purchasing power of cash balances (i.e. notes and coin, and bank and building society deposits). In essence, then, those individuals who hold part of their wealth in cash balances will find a reduction in the purchasing power of their wealth. Actually, every part of a person's wealth that is denominated in money terms only, such as government bonds with fixed interest rates, will suffer a reduction in real value when the price level increases. After all if you own a ¢1 million bond, and the price level doubles, when you cash in that bond, the ¢1 million will buy only half as many goods and services at the higher price level.

Consequently, whenever there is a rise in the price level, the real value of all assets denominated in money terms falls. Individuals will therefore tend to spend less. Planned purchases (real national income) will fall.

3. Substitution of Foreign Goods

Any increase in the price level in the country will make domestically produced goods relatively more expensive compared to foreign-produced goods (assuming a stable exchange rate). That means that an increase in the country's price level will cause planned purchases of domestically produced goods to fall and planned purchases of foreign-produced goods (imports) to rise because they are more competitive. It also means that foreigners will no longer want to purchase as much of our production (i.e. exports) as before. In sum, the demand for our domestic real output (production) will fall when our price level rises.

The Aggregate Supply Curve

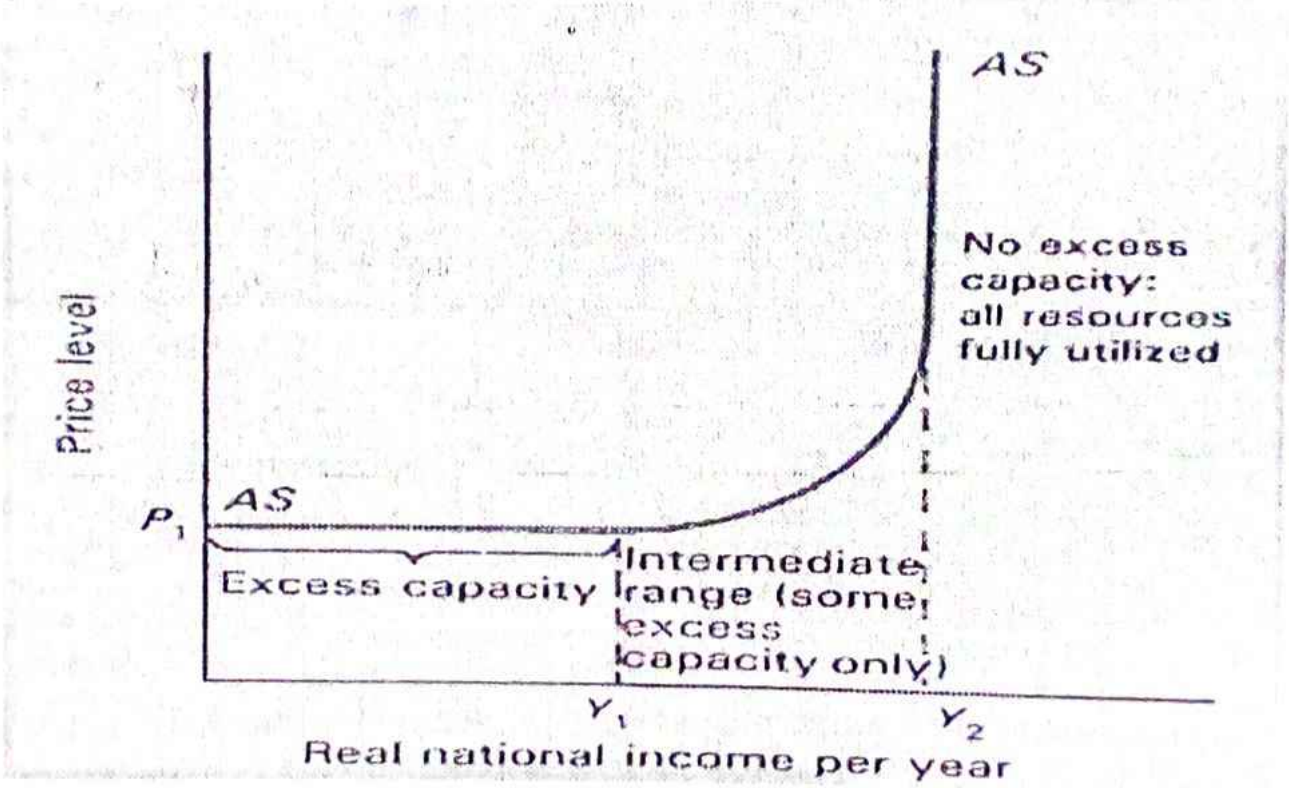
The aggregate supply curve represents the relationship between real income, or output, and the price level. It would be nice to say simply that the aggregate supply curve slopes up, because the higher the price level, the more producers are willing to produce - because producers have a greater incentive and they can cover any additional costs incurred in the increased output. But remember, just as with our discussion of the aggregate demand curve, we are talking about changes in the price level - the index of the weighted average of all prices. Every price is allowed to vary. In order to understand the true nature of the aggregate supply curve, we have to examine three situations:

1. Large amounts of unused capacity and significant unemployment
2. Full capacity
3. Intermediate range between the two.

Figure 5.2

The Three Ranges on the Aggregate Supply Curve.

Starting out at a price level of P_1 the aggregate supply curve, AS AS, is a horizontal line up to quantity of real national income. It is a horizontal line up to quantity of real national income, Y_1. It is a horizontal line because there is excess capacity such that any increase in production does not raise per-unit costs. Output level $Y_1 - Y_2$ is where some sectors experience excess capacity but others do not. In other words, bottle-necks appear as the economy moves closer and closer to maximum capacity. Those sectors experiencing near full capacity will find that their per-unit costs are rising, and therefore the prices charged for their commodities will rise. The general price level will therefore rise as output increases from Y_1 to Y_2. This is called the intermediate range, where there is some excess capacity. At Y_2 there is no excess capacity - the economy is experiencing full employment of all its resources, and using its technology to its fullest. The only thing that can happen, therefore, is for prices to rise. Output cannot increase, by definition, past Y_2 or full capacity output.



1. Unused Capacity and Significant Unemployment

When the economy has many factories operating at less than capacity, numerous individuals unemployed, and a general underutilization of the productive capabilities of the nation, it is possible to increase output without there being any pressure on prices. In such a setting, producers can increase supply at will without having to pay higher prices for factors of production. If they need more labour, they can hire someone who was previously unemployed. They need not pay higher wages to attract people. They can put them to work with some previously idle capital equipment. In other words, per-unit costs of output will remain the same, no matter what the volume of output is, so long as significant amounts of unemployment and unused capacity remain. In these circumstances, we would expect the aggregate supply curve to be a horizontal line at the current price level.

Consider that the current price level is P_1 as given on the vertical axis of Figure 5.2. The horizontal line labelled **'excess capacity'** represents that part of the aggregate supply curve, AS-AS, that exists when there is no pressure on prices with any increase in output. Within this range, supply is perfectly elastic.

2. No Excess Capacity

Now consider the other extreme situation where there is absolutely no excess capacity. In other words, the economy is at full employment. It is impossible, by definition, for any additional output to be produced. What will the shape of the aggregate supply curve look like now? Obviously, it has to be a vertical line, as shown at output rate Y_2 in Figure 5.2. It is a vertical line because there is only one thing that can happen in such a situation - the price level can rise, but no further increases in output are physically possible. Supply can be said to be perfectly inelastic. .

The vertical portion of the aggregate supply curve in Figure 5.2 is also a representation of aggregate supply in the long run. That is to say, in the long run, when all prices are flexible, the potential level of real national income (total output) is independent of the price level. Rather, it depends only on the supply of resources and the economy's technology. As technology advances, and the stock of capital increases, more can be produced so the vertical line showing full capacity output will shift gradually to the right.

3. Intermediate Range

When there is some excess capacity in some parts of the economy, but no excess capacity in other parts of the economy, then, as production is increased, the price of some goods and services will be pushed up (but **not** the price of **all** goods and services).

This is the beginning of **demand-pull inflation.** So-called bottle-necks, or supply constraints may develop. As firms try to increase output they may experience shortages of certain inputs, most frequently, certain kinds of skilled labour. When this happens, firms can try to attract more of the scarce input by paying a higher price for it. They compete with each other for a limited supply of people with scarce skills, thus driving wage rates up. This raises their costs of production, and they then react by raising their prices whenever they can.

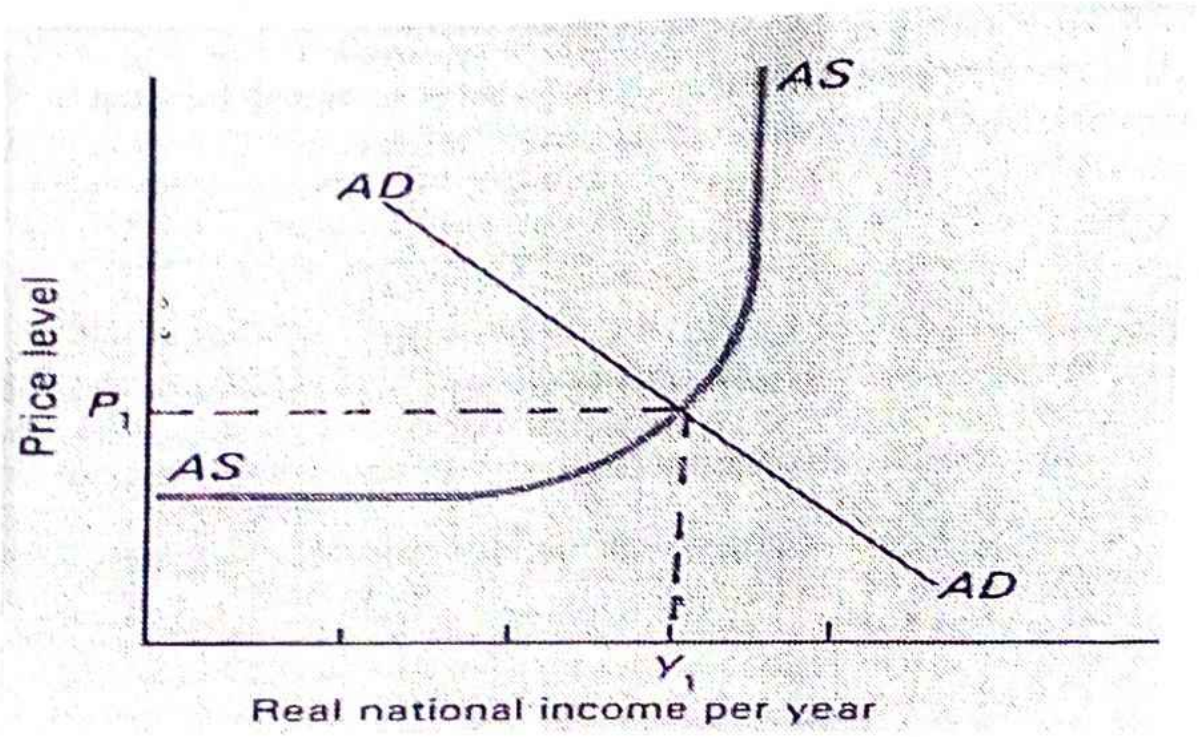
The intermediate range of the aggregate supply curve is, in essence, based on this bottle-neck explanation. As the aggregate supply curve starts to slope up, it will become steeper and steeper as full-capacity output is approached, because, as this happens, more and more supply constraints appear. As they appear certain prices increase. Also in this situation sellers can anyway put prices up, without losing customers. Since the price level is a weighted average of all prices, if some prices stay constant and some go up the price level will rise, too. That means that if we start at the end of the excess capacity rate of output, Y_1 in Figure 5.2, and increase production, the price level will rise along with real national income. In this range, there is a positive relationship between real national income and the price level. As supply constraints become more numerous, supply becomes less and less elastic. Successive increases in spending lead to smaller and smaller increases in output or real income.

Putting Aggregate Demand Aggregate Supply Together

Equilibrium occurs at the intersection of the aggregate demand curve (AD AD) and the aggregate supply curve (AS-AS), at price level P_1 and real national income of Y_1. At that price and real national income, aggregate demand and aggregate supply are in equilibrium, as shown in Figure 5.3

Figure 5.3

Equilibrium Price Level and Output. *The intersection of the aggregate demand curve, AD-AD, and the aggregate supply curve, AS-AS, generates the equilibrium price level at P_1 and the equilibrium real national income (total output) at Y_1*



EXPLAINING INFLATION

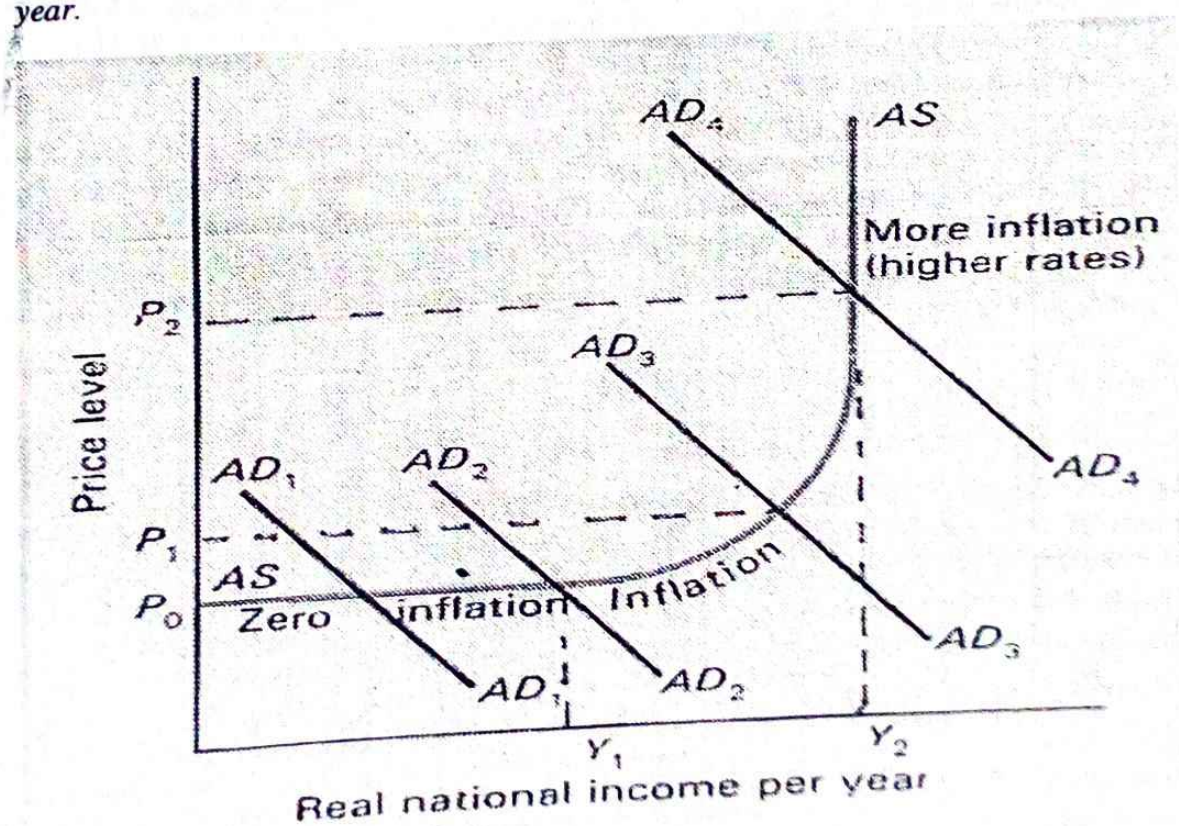
In Chapter 3, there was a discussion of demand-pull inflation. Using shifts in the aggregate demand curve, and the aggregate supply curve shown in Figure 5.4 we can explain the phenomenon of demand inflation. Start out at price level P_0. Assume that the aggregate demand curve is $AD_1 - AD_1$. An increase in the aggregate demand curve to $AD_2 - AD_2$ will not alter the price level. There will be no inflation. However, as given in Figure 5.4, at any point past real national income of Y_1 per year, there will be some sectors experiencing full employment or no excess capacity. Therefore an increase in demand from $AD_2 - AD_2$ to $AD_3 - AD_3$ will cause the price level to increase from P_0 to P_1, and any further increase will cause an even higher price level, as firms compete for increasingly scarce resources with which to raise output. If the demand curve shifts to $AD_4 - AD_4$, the price level will rise to

P_2. Indeed, no output rate greater than Y_2 per year is physically possible. That means that any increase in demand after that output rate will simply result in a higher price level (inflation).

Demand inflation can be defined as any increase (rightward shift) in the aggregate demand curve after output rate Y_1.

Figure 5.4

Demand-pull Inflation. *The aggregate supply curve, AS-AS, is shown as first a horizontal line, then a positively sloped line, then a vertical line, to represent output rates with excess capacity, declining excess capacity (supply constraints), and no excess capacity. If the aggregate demand curve intersects the aggregate supply curve prior to output rate Y_1, then any increase in demand will not lead to a rise in the price level. Thus, a shift from AD_1 to AD_2 leaves the price level unaltered at P_0. A shift from $AD_2 - AD_2$ to $AD_3 - AD_3$, however, will cause the price level to increase to P_1. After output rate Y_2, any increase in demand will simply result in a higher price level, since, by definition, at full employment, no more output is physically possible. An increase in demand from $AD_3 - AD_3$ to $AD_4 - AD_4$ will increase the price level to P_2. Demand-pull inflation occurs any time the aggregate demand curve increases and intersects the aggregate supply curve at some output rate greater than Y_1 per year.*



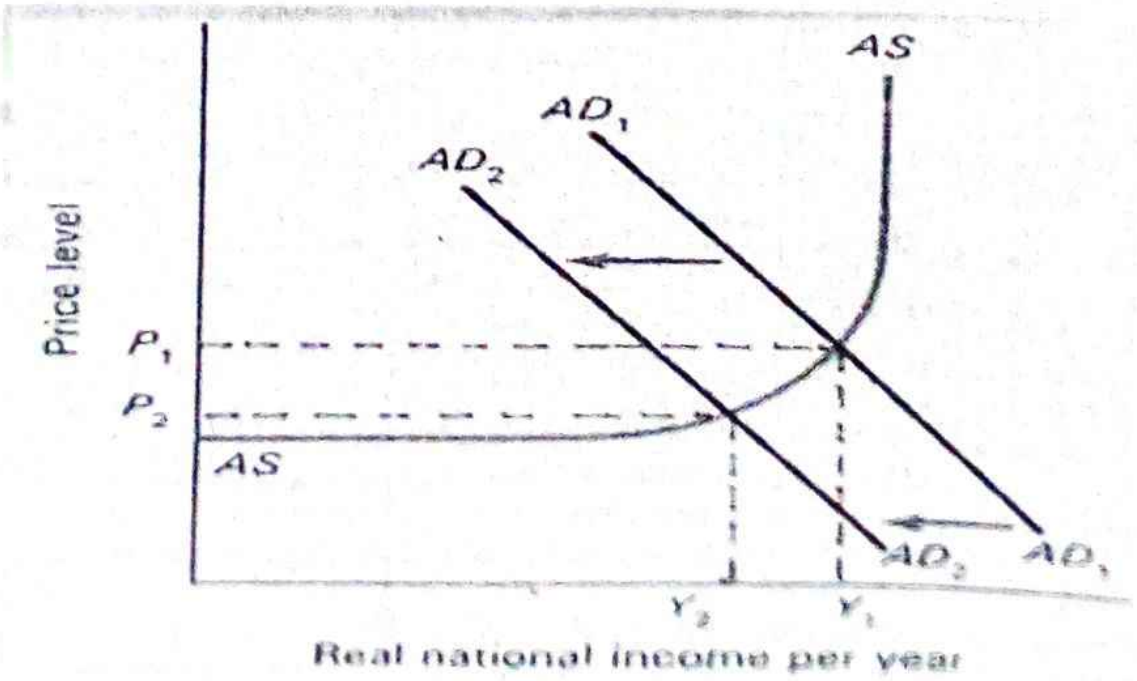
EXPLAINING THE GREAT DEPRESSION

The Depression of the 1930s affected business everywhere, but probably most dramatically in the United States. From 1929 to 1933, real GNP fell by 29.4 per cent. Unemployment had reached 25 per cent of the civilian labour force. Prices fell by 23.6 per cent during that same period.

Aggregate supply and aggregate demand analysis can help us to understand what happened during the Great Depression. Look at Figure 5.5. Here we show an aggregate supply curve, AS-AS, with the three ranges discussed above. Assume that during the period 1929-33, nothing happens to shift the aggregate supply curve. In 1929, aggregate demand is $AD_1 - AD_1$. For a variety of reasons - falling international demand for goods produced in the United States, less desired investment by firms, less desired consumption by households, and for other reasons - the aggregate demand curve decreases - shifts inwards to the left - to $AD_2 - AD_2$. In 1929, the price level was P_1 and the real national income per year was Y_1. By 1933, the price level has fallen to P_2 and the real national income per year had fallen to Y_2.

Figure 5.5

Explaining the Great Depression. *The supply curve for the period 1929-33, is assumed to remain stable at AS-AS. In 1929, the aggregate demand curve is given by $AD_1 - AD_1$. The intersection of this aggregate demand curve and the aggregate supply curve yields an equilibrium price level of P_1 and an equilibrium output level or real national income per year of Y_1. For a variety of reasons, and, in particular, a collapse in planned investment by firms, the aggregate demand schedule decreased, that is, shifted inwards to the left to $AD_2 - AD_2$. It intersected the aggregate supply schedule at an equilibrium price of P_2 and an equilibrium output of Y_2 per year. Prices fell, and so, too, did output.*



Key Points 5.1

- Aggregate demand is the sum of all planned expenditures for both con umption and investment purposes, by both the private and the public sector.
- Aggregate demand will fall when the price level rises, because of interest rate and wealth effects, and because of substitution of foreign for domestic goods.
- The aggregate supply curve shows the relationship between the price level and total output.
- So long as there is excess capacity, output can be increased. As more and more sectors of the economy reach full capacity, increasing output brings successively larger price increases.
- At full capacity, increasing aggregate demand fails to stimulate increasing output and leads only to rising prices.

Short-run versus Long-run Aggregate Supply Curves

In our discussion of the aggregate supply curve, we mentioned that the vertical portion is really equivalent to the long-run aggregate supply curve, since it indicates maximum potential output possible with given resources and given technology.

It would logically follow, then, that the horizontal and positively sloped section of the aggregate supply curves, as given in Figures 4.2, 4.3, 4.4, and 4.5 should properly be labelled short-run aggregate supply curves. In other words, it is only in the short run that an increase in total output in the economy is possible simply because aggregate demand has increased. If we are concerned primarily with the horizontal and positively sloped sections of the full aggregate supply curve, we can label our aggregate supply curves as short run, or SRAS. This will avoid any confusion with questions relating to economic growth, which properly apply only to the long-run vertical supply curve and our ability to shift it outwards over time through saving and investment as well as more efficient use of our resources.

Supply-side Economics

The two examples we have already given to demonstrate the use of aggregate supply and aggregate demand related to shifts in the aggregate demand schedule. Those shifts are often called **aggregate demand shocks.** We can now look at an example in which there is an attempted shift in the short-run aggregate supply curve. This is sometimes called an **aggregate supply shock**. The example we wish to discuss concerns the government policy referred to as supply-side economics.

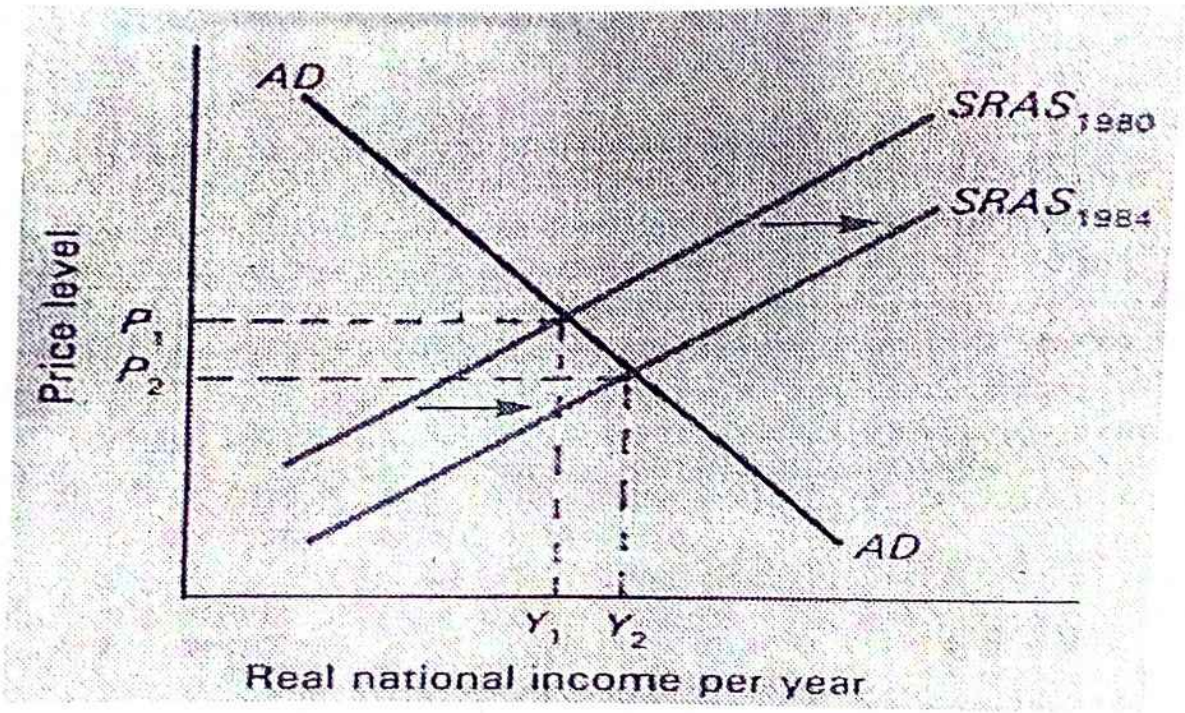
Supply-side economics involves creating incentives to increase productivity. Recent governments have argued that a reduction in marginal tax-rates would induce individuals to work harder. This would improve efficiency and increase real income. The short-run aggregate supply curve would shift to the right and there could be a reduction in the rate of inflation. Supply would expand to meet demand.

Look at Figure 5.6. The aggregate demand curve is AD-AD. The aggregate supply curve is given as SRAS. The equilibrium price level is P_1 and the equilibrium real national income per year is Y_1. The short-run aggregate supply curve moves outwards so that the equilibrium price level would fall to P_2 (i.e. lower the rate of inflation, in a dynamic setting), and the equilibrium level of real national income would increase to Y_2 per year.

However historical evidence is not overwhelmingly supportive of this supply-side argument.

Figure 5.6

Supply-side Economics in Theory. *The equilibrium price level, P_1 and real national income, Y_1 per year, is given by the intersection of the short-run aggregate supply curve, $SRAS_{1980}$ and the aggregate demand curve. For simplicity's sake we keep the aggregate demand curve stable. A reduction in marginal tax-rates presumably was to increase incentives for workers to work harder and longer. This increase in productivity was to increase short-run aggregate supply so that $SRAS_{1984}$ would be to the right of $SRAS_{1980}$. The new equilibrium would be at an increased output of Y_2 per year, and a reduced price level, P_2. This would be an example of an aggregate supply shock with a stable aggregate demand curve.*



Key Points 5.2

- Only in the short run can output be increased simply because aggregate demand has increased.
- In the long run, the growth of output depends on the level of investment and the state of technology.
- If people can be induced to work harder or more efficiently, the aggregate supply curve will shift to the right

Aggregate Demand: Consumption, Saving, and Investment

Aggregate demand was defined **as the sum total of all planned expenditures over a year's period**. We found that the aggregate demand curve was downward-sloping – there is an inverse relationship between the price level and aggregate demand. In order to find the equilibrium price level and the equilibrium level of real national income per year, it was also necessary to use the aggregate supply curve. But supposing we are dealing only with that portion of the aggregate supply curve that is a horizontal line? If there are large amounts of unused productive capacity and unemployment, an increase in aggregate demand will not raise prices, and a decrease in aggregate demand will not cause firms to reduce prices. In such a situation, the equilibrium level of real national income per year is completely demand-determined. Thus, in order to construct a model of income determination, **we need only to understand the determinants of aggregate demand.**

In the simple models that we have used so far, aggregate demand determinants have been limited to planned consumption expenditures on the part of households, and planned investment expenditures on the part of firms. We will examine what determines the rate of planned consumption expenditures and what determines the rate of planned investment expenditures.

Keynesian Economics

John Maynard Keynes, who wrote *The General Theory of Employment, Interest, and Money* suggested that many prices, and especially the price of labour (wages), are sticky downwards. Therefore, even in situations of excess capacity and large amounts of unemployment, we will not necessarily observe the price level falling. Rather, what we will observe is continuing unemployment and a reduction in the equilibrium level of real national income per year. Keynes argued that, to some extent, the lengthy duration of the Great Depression could be explained by the sticky-downward nature of prices and wages. Thus, a general economy-wide equilibrium can occur, and last for a long time, even when there is excess capacity. Keynes and his followers argued that capitalism was therefore not necessarily a self-regulating system, sustaining eternal prosperity and full employment. Keynes, at the time, was attacking the so-called classical view of the world, which argued that markets would all clear. Prices and wages would adjust; as wages fell, more people would be employed and full employment would never be far away.

Some Simplifying Assumptions

We have already assumed that prices will not rise when output rises, so for the time being, we need not concern ourselves with inflation. We will be seeing the economy in real terms. In order to simplify the income-determination model that follows, a number of other assumptions are made:

1. Firms pay no indirect taxes (for example, VAT).
2. Firms distribute all of their profits to shareholders.
3. There is no depreciation (capital consumption allowance) so that gross private domestic investment equals net investment.
4. The economy is closed, i.e. there is no foreign trade.

Given all of these simplifying assumptions, real disposable income will be equal to real national income minus taxes.

Definitions and Relationships

There are literally only two things you can do with a cedi's worth of income (in the absence of taxes). You can consume it or you can save it. If you consume it, it is gone for good. However, if you save the entire cedi you will be able to consume it (and perhaps more if it earns interest) at some future time. That is the distinction between **consumption** and saving. Consumption is the act of using income for the purchase of consumer goods. **Consumer goods** are those that are purchased by households for immediate satisfaction. Consumer goods are such things as films, food, clothing, and the like. By definition, whatever you do not consume you save and can consume sometime in the future.

The Difference between Stocks and Flows

It is important to distinguish between saving and savings. Saving is an action that occurs at a particular rate such as ¢50,000 a week. This rate is called a **flow**. It is expressed per unit of time, usually a year. Implicitly, then, when we talk about saving we talk about a flow or rate of saving. Savings, on the other hand, is a **stock** concept measured at a certain point or instant in time. ***Your current savings are the result of past saving.*** You may presently have savings of ¢10 million that are the result of four years' saving at a rate of ¢2,500,000 a year. Consumption, being related to saving, is also a flow concept. You consume from after-tax income at a certain rate per week, per month, or per year.

Relating Income to Saving and Consumption

The relationship of saving, consumption, and disposable income is therefore:

Consumption + saving = disposable income.

This is called an *'accounting identity'*. It has to hold true at every moment in time. From it we can derive the definition of saving:

Saving = disposable income - consumption.

Investment

Investment is also a flow concept. Investment is defined as expenditures by firms on new machines and buildings - **capital goods** -, that are expected to yield a future stream of income. This we call fixed investment. Additionally, we include in our definition *changes* in stocks. When some of current output is not sold, stocks increase. Similarly if demand exceeds current production, firms will run down stocks, to meet the demand. To the extent that stocks are run down, investment will be lower.

Key Points 5.3

- If we assume that prices will not rise as output increases, the equilibrium level of real national income is demand-determined. (The economy is on the horizontal section of the aggregate supply curve.)
- Saving is a flow concept, something that occurs over time. Savings, on the other hand, are a stock. They are the accumulation due to past saving.

- Saving equals disposable income minus consumption
- Investment is a flow concept, also. It includes expenditures on new machin s, buildings and equipment, new houses, and changes in the level of stocks.

Determinants of Planned Consumption and Planned Saving

The major determinant of planned real consumption expenditures is clearly expressed in Keynes's 1936 book. According to Keynes's General Theory, when we look at consumption, we find that:

the fundamental psychological law, upon which we are entitled to depend with great confidence both ***a priori*** *from our knowledge of human nature and from the detailed facts of experience, is that men are disposed, as a rule and on the average, to increase their consumption as their income increases, but not by as much as the increase in their income.*

A relationship is suggested here between the planned consumption expenditures of households and their current income. This relationship is called the **consumption function**. It shows how much all households plan to consume per year with each level of real disposable income per year. The first three columns of Figure 5.7 show a consumption function for a hypothetical group of households.

We see from Figure 5.7 that as real disposable income goes up, planned consumption rises also, but by a smaller amount, as Keynes suggested. Planned saving also increases with disposable income. Notice, however, that below an income of 5000 units the planned saving is actually negative. The more income drops below that level, the more people dissave, either by going into debt or by drawing on past savings.

Figure 5.7 Hypothetical Real Consumption and Saving Schedules.

At levels of disposable income below 5000 units, planned saving is negative.

- *In column (4), we see the average propensity to consume, which is merely planned consumption divided by disposable income.*
- *Column (5) lists average propensity to save, which is planned saving divided by disposable income.*
- *Column (6) is the marginal propensity to consume, which shows the proportion of additional income that will be consumed, ΔC (the change in consumption) over ΔY (the change in income).*
- *And finally, column (7) shows the portion of additional income that will be saved, or the marginal propensity to save*

Figure 5.7

Combination	(1) Real disposable income Y_d (Units per year)	(2) Planned real consumption C (Units per year)	(3) Planned real saving $S \equiv Y_d - C$ (1) − (2) (Units per year)	(4) Average propensity to consume $APC \equiv C/Y_d$ (2) ÷ (1)	(5) Average propensity to save $APS \equiv S/Y_d$ (3) ÷ (1)	(6 C rge ir cc sumption $MPC \equiv \frac{\Delta C}{\Delta Y_d}$	(7) Change in saving $MPS \equiv \frac{\Delta S}{\Delta Y_d}$
A	0/yr	1 000/yr	−1 000/yr	...	...	...	...
B	1 000	1 800	−800	1.80	−0.8	0.8	0.2
C	2 000	2 600	−600	1.30	−0.3	0.8	0.2
D	3 000	3 400	−400	1.133	−0.133	0.8	0.2
E	4 000	4 200	−400	1.05	−0.05	0.8	0.2
F	5 000	5 000	0	1.00	0.00	0.8	0.2
G	6 000	5 800	200	0.967	0.033	0.8	0.2
H	7 000	6 600	400	0.943	0.057	0.8	0.2
I	8 000	7 400	600	0.925	0.075	0.8	0.2
J	9 000	8 200	800	0.911	0.089	0.8	0.2
K	10 000	9 000	1 000	0.9	0.1	0.8	0.2

Graphing the Numbers

In Figure 5.8 the vertical axis measures the level of planned consumption per year, and the horizontal axis measures the level of real disposable income per year. In Figure 5.9 the horizontal axis is again real disposable income per year, but now the vertical axis is planned saving per year. All of these are on a pounds per year basis, which emphasizes the point that we are measuring flows, not stocks.

Figure 5.8 shows the consumption function and Figure 5.9 the savings function. The savings function is the compiement of the consumption function because consumption plus saving always equal disposable income. What is not consumed is, by definition, saved. The difference between actual disposable income and the planned level of consumption per year must be the planned level of saving per year.

Figure 5.8 shows the consumption function intersecting, **the 45-degree line**. Along the 45-degree line, ***expenditure is exactly equal to income***, so at point F, where the consumption function intersects the 45-degree line, ***real disposable income equals planned consumption***. Point F is sometimes labelled the breakeven income point because there is neither positive nor negative saving. This can be seen in Figure 5.9 as well. The planned annual rate of saving at a real disposable income level of 5 000 units is indeed zero.

Figure 5.8 The Consumption Function.

If we plot the combinations of real disposable income and planned consumption from columns (1) and (2) in Figure 5.7 we get the consumption function. Every point on the 45-degree line bisecting this diagram is equidistant from the horizontal and the vertical axes; thus, at every point on it, consumption equals real disposable income. Where the consumption function crosses the 45-degree line, we know that consumption equals real disposable income and there is zero saving. The vertical distance between the 45-degree line and the consumption function measures the rate of saving or dissaving at any given income level

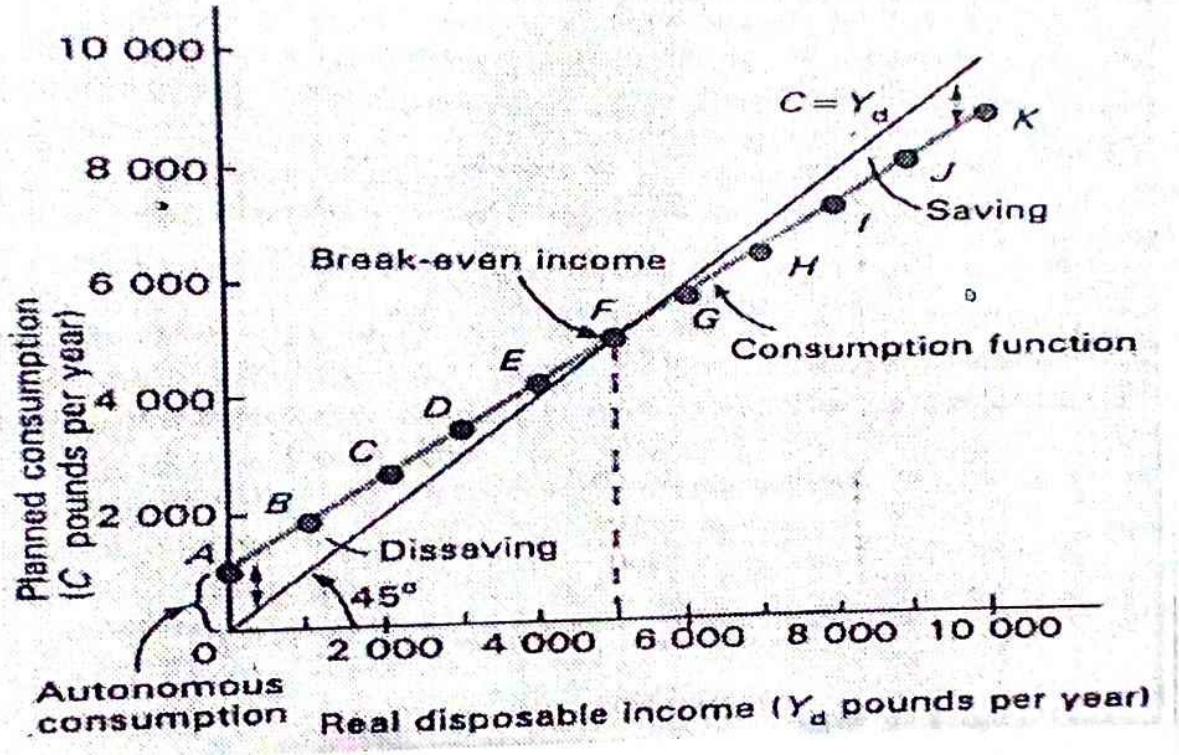
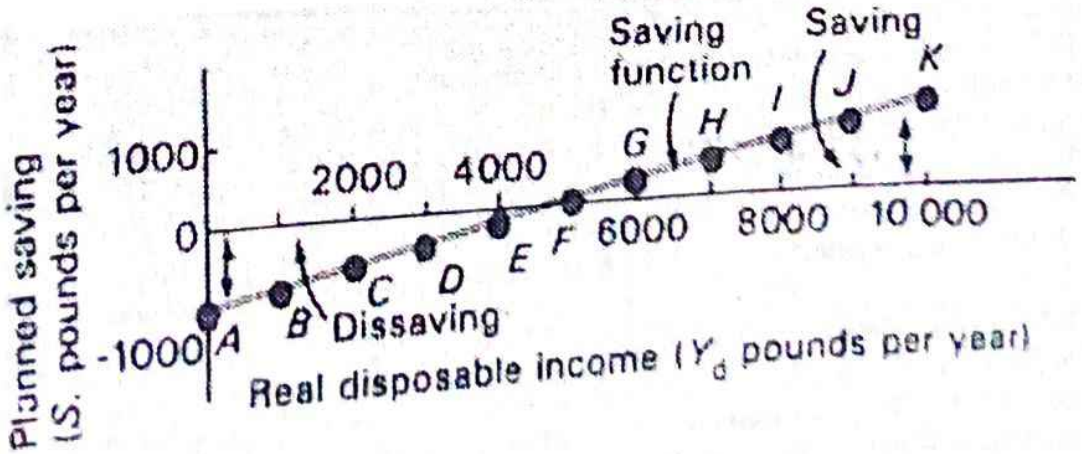


Figure 5.9 The Saving Function.

If we plot the relationship between column (1), real disposable income, and column (3), planned saving, from Figure 5.7, we arrive at the savings function shown in this diagram. It is the complement of the consumption function presented in Figure 5.8 above



Dissaving and Autonomous Consumption

To the left of point F on Figures 4.8 and 4.9 this hypothetical family engages in dissaving. The amount of saving or dissaving in Figure 5.8 can be found by measuring the vertical distance between the 45- degree line and the consumption function. This simply tells us that if real disposable income temporarily falls below 5000 units, consumption will not be cut back by the full amount of the reduction. People will instead go into debt or consume past saving in some way to compensate for the loss.

Now look at the point on the diagram where real disposable income is zero but planned consumption per year is 1000 units. This amount of planned consumption, which does not depend at all on actual disposable income, is called **autonomous consumption**. In other words, the autonomous consumption of 1000 units is independent of the level of disposable income. (We are, of course, assuming here that real disposable income does not equal zero year in year out.) It seems reasonable to assume that some spending continues in order to preserve life.

There are, of course, many possible types of autonomous expenditures. We generally take investment to be autonomous - existing independently of the model. We can assume that government expenditures are autonomous, depending as they often do on political forces.

In contrast to autonomous spending, which is independent, there is also **induced** spending. This is defined as spending which depends directly upon the level of income. Apart from their autonomous elements, saving and consumption are both induced. As incomes rise, both saving and consumption will rise too.

Average Propensity to Consume and to Save

Columns (4) and (5) of Figure 5.7 show the average propensity to consume (APC) and average propensity to save (APS). They are defined as:

$$\text{APC} \equiv \frac{\textbf{consumption}}{\textbf{real disposable income}}$$

$$\text{APS} \equiv \frac{\textbf{saving}}{\textbf{real disposable income}}$$

Notice that the average propensity to consume decreases as real income increases. This decrease simply means that the fraction of the family's real disposable income going to saving rises as income rises. The same fact can be found in column (5). The average propensity to save, which at first is negative, finally hits zero at an income level of 5000 and then becomes positive. In this example, it reaches a maximum value of 0.1 at income level 10000. This means the household saves 10 per cent of a 10000 income.

Marginal Propensity to Consume and to Save

Now we go the last two columns in Figure 5.7. These are labelled **marginal propensity to consume** (MPC) and **marginal propensity to save** (MPS). We have already used the term *marginal*. It means ***'small change in'***. The marginal propensity to consume, then, is defined

Planned consumption per year will increase by the marginal propensity to consume (0.8) times the increase in real disposable income, or 0.8 x 2500 units 2000 units; that is, planned consumption will rise from 5000 units to 7000 units per year. The same analysis holds for a decrease in disposable income. These represent movements along a given consumption function, CC.

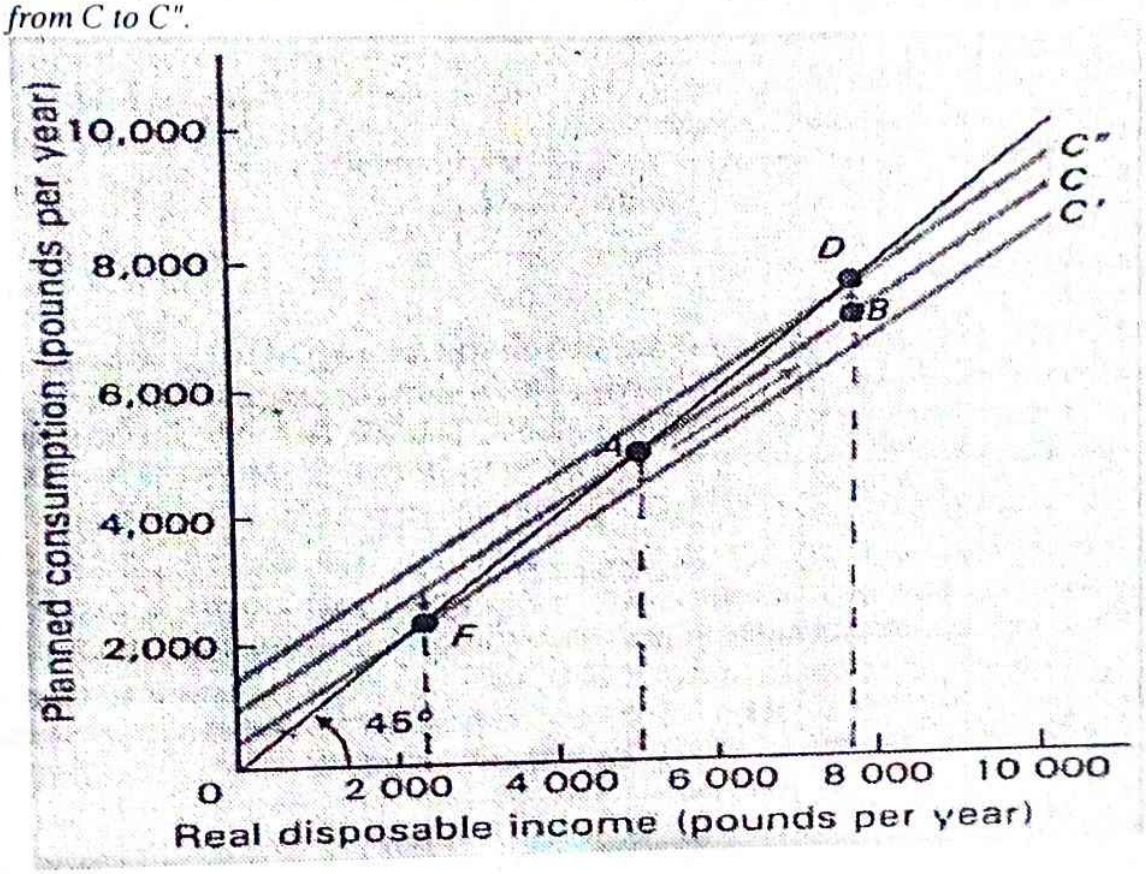
How do we represent a decrease in autonomous consumption? In Figure 5.10 the autonomous part of planned consumption was 1000 units. If we wish to represent a decrease in the autonomous component of planned consumption, we must shift the entire consumption function downwards by the amount of this decrease. For example, a 500 units decrease in the autonomous component of consumption will shift the consumption function C down to C'. The break-even point moves from point A, or 5 000 units, to point F, or 2 500 units. If the autonomous component of consumption shifts upward, the consumption function will shift from C to C". Another way of looking at this is to realise that an increase in the consumption function means that at all real disposable income levels, more will be consumed than before, and vice versa.

Shifts in the entire consumption function are similar to shifts in the demand and supply curves. With a typical supply-demand relationship, a change in the price of the product brings about a movement along given demand and supply curves. Any change in a non-price determinant of demand or supply causes the curves to shift. Similarly, a change in real disposable income will cause us to move along a given consumption function. Any change in the non-income determinants of consumption will cause a shift in the entire consumption function. That is what we were discussing when we referred to changes in the autonomous part of planned consumption. Those changes result from changes other than those in the level of disposable income.

Key Points 5.4

- The consumption function shows the relationship between planned rates of consumption and real disposable income per year. The saving function is the complement of the consumption function, since saving plus consumption must equal real disposable income.
- The average propensity to consume is equal to consumption divided by real disposable income.
- The average propensity to save is equal to saving divided by real disposable income.
- The marginal propensity to save is equal to the change in planned consumption divided by the change in real disposable income.
- The marginal propensity to consume is equal to the change in planned saving divided by the change in real disposable income.
- APC + APS = 1, MPC + MPS = 1
- Any change in real disposable income will cause the planned rate of consumption to change; this is represented by a movement along the consumption function.

Figure 5.10 - Distinguishing between Movements along and Shifts in the Consumption Function. *Starting at the break-even real disposable income at point A on Line C, if real disposable income increases by 2500 units per year, then we will experience a movement from point A to point B along that consumption function. Planned consumption will go up by the product of marginal propensity to consume and the increase in real disposable income, or by 0.8 x 2500 units = 2000 units. Planned consumption will rise from 5000 units to 7000 units. On the other hand, if there were a 500 units per year decrease in autonomous consumption, the entire consumption function would shift from C to C'. If there were a 500 units per year increase in the autonomous component, the consumption function would shift from C to C".*



The Non-Income Determinants of Consumption

So far, the only determinant of spending in our theory of consumption has been income. There are, of course, other determinants of real consumption. They include the following:

(1) wealth,

(2) expectations,

(3) interest rates and the ease with which credit can be obtained, and

(4) the distribution of income

1. Wealth

Other things being equal, the position of the consumption function will depend partly on the real wealth that an individual has. Wealth includes all the cars, houses, stereos, and bonds that a household possesses. We predict that when the real wealth of a household increases, the consumption function will shift upwards, and when it decreases the converse will hold. Inflation can affect one's real wealth and, therefore, the position of the consumption function.

Inflation can erode the value of money-denominated assets (all other things being held constant), causing the consumption function to fall.

Changes in asset prices affect real wealth, irrespective of the rate of inflation. If house prices rise much faster than the general rate of inflation, people feel richer. They may be able to remortgage their homes for a larger sum, which will give them increased spending power. The consumption function will then shift upwards.

2. Expectations

Particularly in the short run, expectations can influence the position of the consumption function. If households anticipate better times ahead (higher income) than currently, the consumption function may shift upwards. If they are pessimistic, it may shift downwards. The expectation of the future rate of inflation relative to today's rate of inflation may also have a bearing on planned consumption expenditures.

3. The interest Rate and Credit Availability

An increase in the interest rate typically leads to a reduction in interest-sensitive purchases such as cars and houses. Most of these are financed by borrowing. Therefore, the higher the rate of interest, the more expensive it becomes to buy a car or a house. Other things being equal, an increase in the rate of interest will lead to a decrease in planned consumption expenditures at every level of real disposable income.

A credit squeeze, in which it is made harder for people to obtain loans for consumer purchases, may be associated with higher interest rates. Before they could buy durable goods, some people would have to save up, and their consumption levels will be lower than they would have been if credit had been easy.

4. The Distribution of Income

Income distribution becomes more unequal when some groups of the population become wealthier while others become poorer. A more equal distribution of income may result from redistributive tax and benefit systems, which tax high incomes heavily in order to pay benefits to those on low incomes. The rich will tend to have a lower marginal propensity to consume than the poor. Some of the income taken from the rich might have been saved. Practically all the income transferred to the poor will be spent on consumption. So a more equal distribution of income will, other things being equal, shift the consumption function upwards.

IS THE MPC CONSTANT?

So far we have assumed that the MPC is constant, which means that the consumption function will be a straight line. Is this reasonable? In practice, it is highly likely that the MPC will fall if income rises. Growth in the standard of living will generally cause people to save a larger proportion of increased income and consume a smaller proportion. A fall in the MPC as income rises would lead to the consumption function levelling off (rising less steeply) as income rises.

When the MPC is constant, so that the consumption function is linear, it can be stated in the form $C = a + bY$, where a is the autonomous element in consumption and b is the MPC (and the gradient of the consumption function)

Permanent-income Hypothesis

In recent years a rather different view of the consumption function has been developed. Basically, the **permanent-income hypothesis** holds that consumption doesn't depend on current disposable income but rather on some measure of expected, or permanent, income. The planning period may be anywhere from two to five years, or even longer, depending upon people's expectations. According to this theory, consumption will not drop drastically even if, for some reason, people's income falls below what they think their permanent income is. Conversely, consumption will not increase very much even if people's income suddenly jumps above the level they consider to be permanent. The permanent income hypothesis suggests that the level of consumption will stay fairly stable over time. (It is part of the theory underlying those views concerning inflation which stress the importance of money.)

A slightly different view of consumption has been set out in the **Life-cycle Hypothesis**. This shows how income varies, for most people, over the years of their lifetimes. In the early stages of their careers, most people have comparatively low earning power. They borrow heavily, to set up house and acquire assets of all kinds. In middle age they will earn more, pay off debts, and save for old age, when once again, they will have smaller incomes. Thus their consumption pattern reflects their long-run expectations of income. Short-run fluctuations in income will affect their spending less than their assessments of their lifetime spending power.

This hypothesis also implies that consumption in the aggregate will be relatively stable over time. Most people's consumption patterns will change little in response to short-lived increases or decreases in income.

The relationship between income and consumption is still subject to a good deal of uncertainty. It matters very greatly too: consumption is the biggest single component part of total expenditure. Accurate forecasting of economic trends depends on being able to predict consumption. Recent experience has underlined the difficulties. Changes in saving have brought these to the surface.

Key Points 5.5

- The non-income determinants of consumption are wealth, expectations, interest rates and credit availability, and the distribution of income.
- Any change in these non-income determinants will shift the consumption function up or down.

Determinants of the level of Saving

Since saving is inversely related to consumption, everything which influences consumption will similarly influence saving - but in the opposite direction.
In particular, people consider the following when taking decisions about saving.

- interest rates,
- inflation rates, and
- expectations about the future,

Low ***rates of interest*** give a poor return on savings held in the form of financial assets such as bank accounts, and may reduce the level of saving.

Inflation, however, leads to a reduction in the value of an individual's stock of savings. If people want to keep their savings at a particular level of purchasing power (e.g. one year's income), they will have to save more for a while in order to rebuild their savings. Or they may be encouraged to save if they can buy granny bonds (index-linked bonds), the value of which is linked to the rate of inflation so that they do not lose their purchasing power. Both interest rates and inflation have been found to be important in determining the level of saving in advanced economies like the UK in recent times.

Expectations would seem to be important in affecting savings decisions. However, the threat of increasing unemployment has not in practice caused increased saving in countries like the UK. The world's thriftiest people are the Japanese, who save roughly a third of their incomes. The threat of unemployment in Japan is comparatively low. Cultural factors, and habit, probably play a major part in determining the level of saving.

Determinants of Investment

Investment has been defined **as expenditure on new plant and capital equipment, and changes in stocks**. Investment levels can be quite volatile, especially net investment, i.e. gross investment less depreciation or capital consumption.
If we compare investment expenditures historically with consumption and saving expenditures, we find that the latter are relatively less variable over time than the former. Investment decisions are based on highly variable, subjective estimates of how the economic future looks. We just discussed the role of expectations in determining the position of the consumption function. Expectations play an even greater role in determining the position of the investment function. This could account for much of the instability of investment over time. Given this chronic instability, it is more difficult to derive a satisfactory theory of planned investment expenditures. None the less, we shall attempt to construct an investment function

The Planned Investment Function

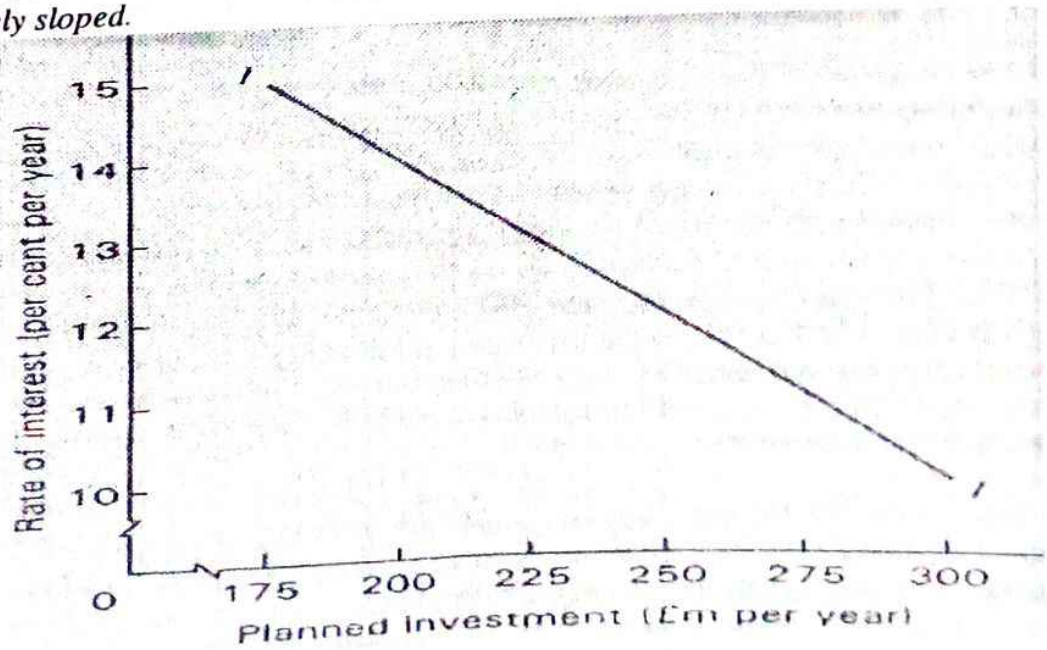
Consider that at any time there is a range of investment opportunities that firms can identify. These investment opportunities have rates of return ranging from zero to very high, with the number (or value) of all such projects inversely related to the rate of return. That is to say, there are certainly fewer investment opportunities with high rates of return than there are with low rates of return. Since each project is profitable only if its rate of return exceeds the opportunity cost of the investment - the rate of interest - it follows that, as the interest rate falls, planned investment spending increases, and vice versa. *(Even if firms use retained earnings (corporate savings) to finance an investment, the higher the market rate of interest the greater the opportunity cost of using those retained earnings, which could have been earning interest, at no risk, in the bank. Thus, it does not matter in our analysis whether the firm must seek financing from external sources or can obtain such financing by using retained earnings).* There will be an increasing number of projects which yield a rate of return sufficient to cover interest charges, as interest rates fall. In other words, a fall in interest rates leads to a movement down the investment function.

A hypothetical investment schedule is given in Figure 5.11. If the rate of interest is 13 per cent, then the quantity of planned investment will be 225 million per year. Notice, by the way, that planned investment is also given on a per year basis, showing that it represents a flow, not a stock. (The stock counterpart of investment is the accumulated stock of capital in the economy.)

The rate of return on investments is sometimes called the ***marginal efficiency of capital*** (MEC), or the ***marginal product of capital***. Keynes recognized that although interest rates and investment would be related, their relationship (i.e. the marginal efficiency of capital or the investment function) could be unstable.

Figure 5.11 - Planned Investment.

If we plot interest rate/planned investment data, we obtain the investment function II . It is negatively sloped.



Other Determinants of Investment

We saw that the consumption function could be related to the level of real disposable income. We also saw that there were other determinants that would shift the schedule up or down. The same analysis can be applied to planned investment. The rate of interest and the rate of planned investment are related. At the same time, there are many other determinants of planned investment. Increased demand in the economy would increase the rate of return. At any given interest rate more investment would take place and the MEC schedule would shift to the right. Other major influences on investment are:

1. expectations,
2. the cost of capital equipment,
3. innovation and technology, and
4. the tax treatment of investment expenditure.

1. Expectations

Firms estimate the future demand for their products in order to assess the likely future profitability of their investments. If higher future sales are expected, then more machines and bigger plants will be planned for the future. More investment will be undertaken.

Each investment undertaken will yield an income stream in the future, which is the profit from the project. This will be total revenue, less total cost. Estimating revenue means deciding the likely level of sales, at the price which the market will bear. Estimating total cost requires knowledge of the costs of all necessary inputs, and of any technological problems which are likely to arise. The resulting estimate of likely profit, for each year of the life of the investment can then be discounted (i.e. reduced by an amount corresponding to market rates of interest) in order to find its present value. If the present value of the total future income stream, yielded by the investment, is greater than the cost of the capital to be invested, then the project looks profitable enough to be viable.

Of course there are risks involved in any investment project. One of these is the risk that unforeseen events, such as inflation, may cause costs and revenues to be less favourable than the firm's estimates suggested they might be. Technical problems may raise costs unexpectedly. Fashions may change the level of demand. The riskier the project, the greater the likelihood of profit must be before the firm goes ahead with the investment.

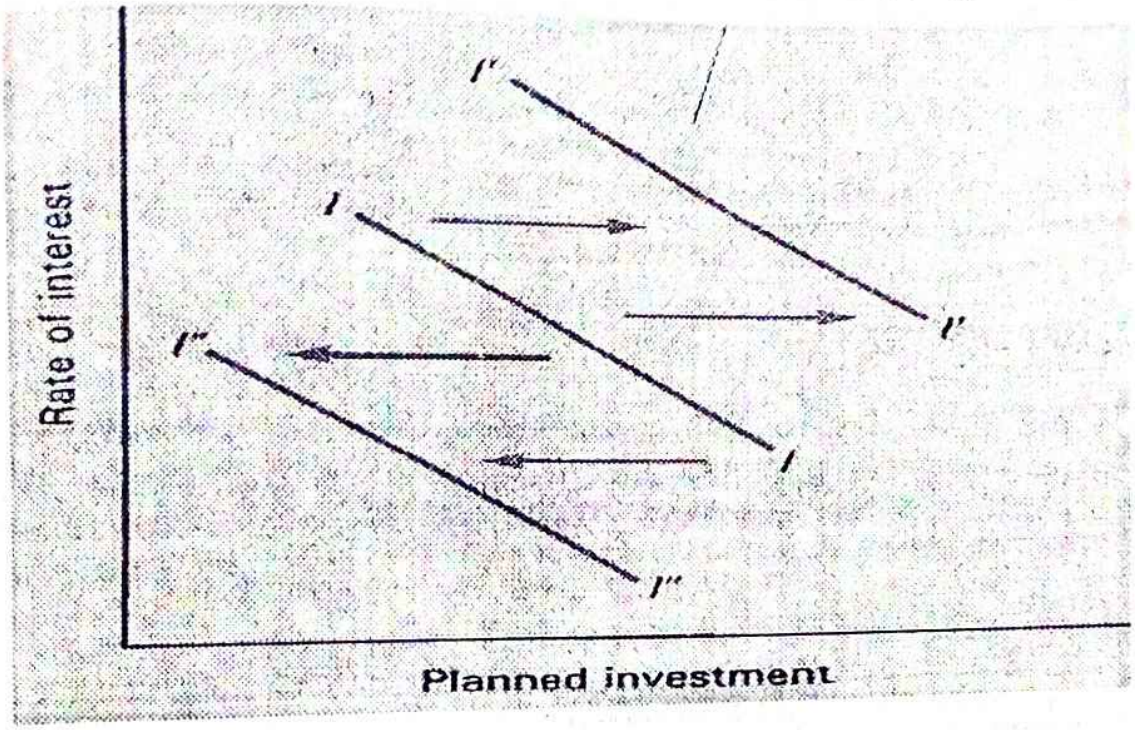
When firms have rosy expectations, and a high level of confidence about the prospects for their sector of the economy, the investment function will shift outwards to the right; that is, at each interest rate, more will be invested than before. If they expect the future to be grim, the investment schedule will move inwards, to the left, reflecting less desired investment at each and every interest rate.

Consider the possibility that expectations have improved dramatically. What will this do to the investment schedule? In Figure 5.12 we see that the investment schedule will shift outwards from *II* to *I'I'*. Thus, the quantity of planned investment expenditures will increase at each and every rate of interest. The rate of return on capital invested is expected to increase so that at any given interest rate, more investment will take place.

The opposite would occur if expectations took a turn downwards. The planned investment schedule would therefore shift leftwards to *I"I"*. In other words, the planned rate of investment expenditures would fall at each and every rate of interest.

Figure 5.12 - Shifts in the Planned Investment Schedule.

We start off with a given investment function II. Consider the possibility that expectations of future profits have improved dramatically. This will shift the investment schedule to I'I'. If expectations change for the worse, then the investment schedule would shift to I"I".



2. Cost of New Capital Goods

If the cost of new plant and equipment suddenly were to increase, (relative to the price at which output can be sold), firms' investment plans may change. In fact, we would expect the investment function to shift leftwards. The opposite would occur if there were an abrupt, unanticipated fall in the relative cost of capital goods. Investment goods become relatively cheaper, even if the price remains the same, if labour costs rise. Labour-saving investment may then increase.

3. Innovation and Technology

Both improvements in current productive technology and innovations could generally be expected to shift the investment function to the right, since both would stimulate a demand for additional capital goods. In other words, we would see an increase in the demand for capital goods at any given interest rate.

4. Profit Taxes

Firms estimate rates of return on investments on the basis of expected after-tax profits. If there is an increase in tax-rates on profits, other things being equal, we expect a shift in the planned investment function leftwards. If there is a decrease in tax-rates, we expect a shift rightwards.

Key Points 5.6

- Saving depends primarily on the rate of interest, the rate of inflation, and sometimes expectations about future economic well being.
- Investment is related though not always closely, to interest rates.
- Investment is significantly affected by profits or by expectations about future profitability; by the cost (supply price) of capital; by the cost of investment relative to that of labour; and by changes in technology and profits tax.

EXAMINATION PREPARATION

PRACTICAL EXERCISE

Assignment: Consider the following table, then answer the questions below it.

Annual Consumption (millions of cedis)	Annual income
5	0
80	100
155	200

(a) What is the APC at the annual income level ¢100 million? At ¢200 million?
(b) What happens to the APC as annual income rises?
(c) What is the MPC as annual income goes from ¢0 to ¢100 million? From ¢100 million to ¢200 million?
(d) What happens to the MPC as income rises?
(e) What number is the APC approaching?
(f) What is the equation for the consumption function in this table

Solution:

(a) $80 \div 100 = 0.8$
$155 \div 200 = 0.775$
(b) It falls
(c) $(80 - 5) \div (100 - 0) = 0.75$
$(155 - 80) \div (200 - 100) = 75 \div 100 = 0.75$
(d) Remains constant
(e) the APC is always falling and approaches the MPC, or 0.75
(f) $C = 5 + 0.75Y$

MULTIPLE CHOICE QUESTIONS

1. If aggregate demand has risen output will not increase if
   (a) productivity is rising
   (b) there are some supply constraints
   (c) the aggregate supply curve is vertical
   (d) there is underutilized capital in the economy

2. Inflation will decelerate if
   (a) aggregate demand is constant and input costs rise
   (b) aggregate demand stays constant and productivity increases
   (c) aggregate supply falls
   (d) (d) aggregate supply is constant

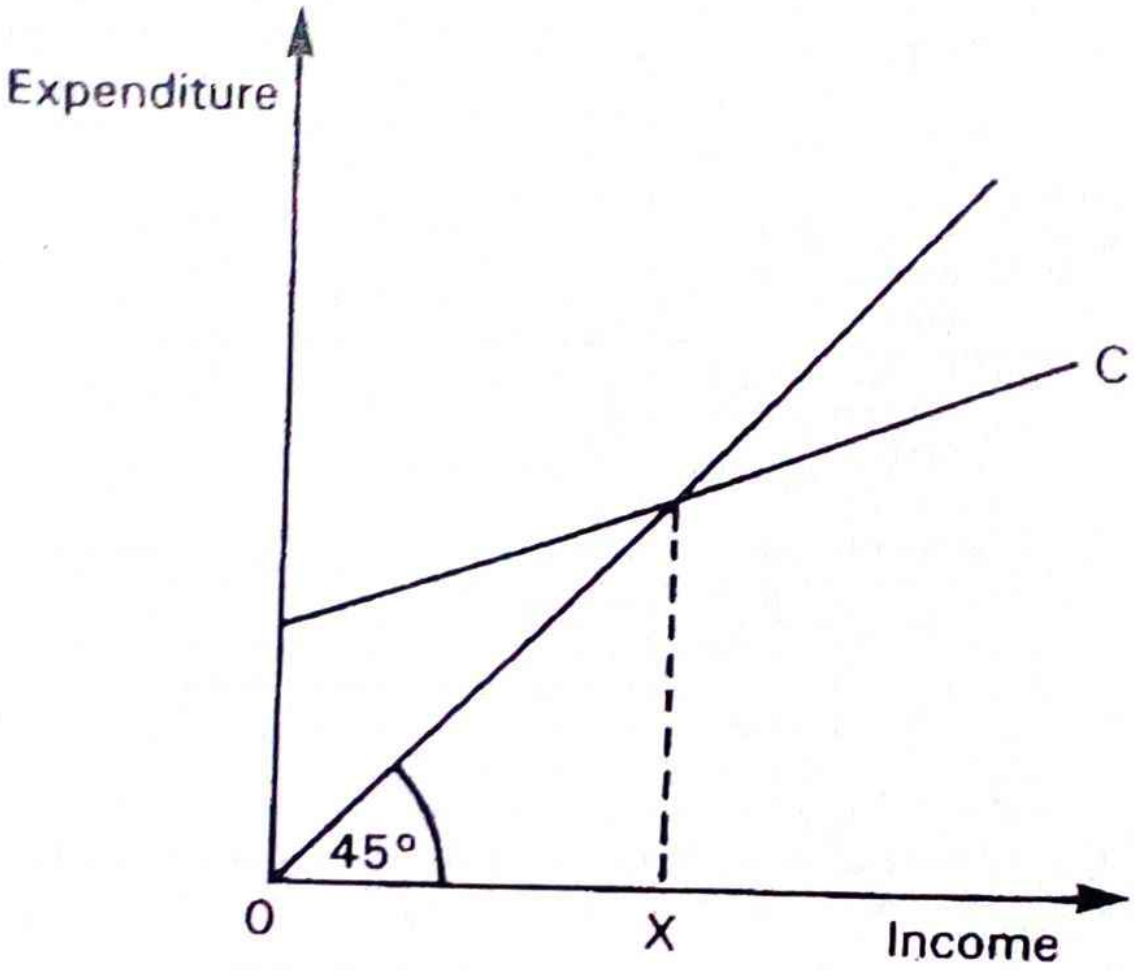
3. If the marginal propensity to consume is rising as income rises, then the
   (a) marginal propensity to save is rising
   (b) marginal propensity to save is constant
   (c) average propensity to consume is rising
   (d) average propensity to consume is constant
   (e) average propensity to save is rising

One or more of the options given in Questions 4 and 5 may be correct. Select your answer by means of the code set out in the grid.

A	B	C	D	E
1, 2, 3, all correct	1, 2 only correct	2, 3 only correct	1 only correct	3 only correct

4. Redistributing income from high- to low-income groups is likely to change aggregate consumption if
   (a) the average propensity to consume is constant
   (b) the consumption function shows a diminishing marginal propensity to consume as income rises.
   (c) the marginal propensity to consume of low-income groups equals unity.

5.

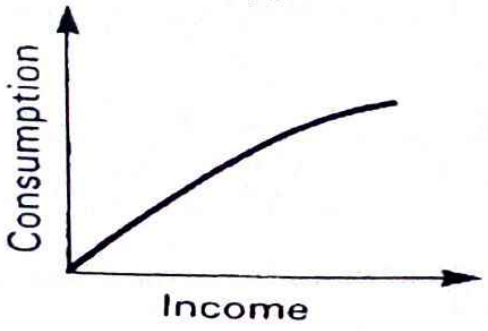


The above diagram illustrates

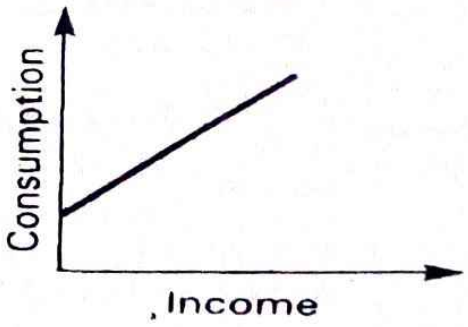
(a) at levels of income above OX, dissaving is taking place
(b) the average propensity to consume is constant
(c) at income level OX the average propensity to consume is equal to unity

6. An analysis of expenditure by households at different income levels suggests that average propensity to consume (APC) is equal to the marginal propensity to consume (MPC) over low-income levels. However, at high-income levels, MPC declines with income and is less than the APC. Which one of the following describes these findings?

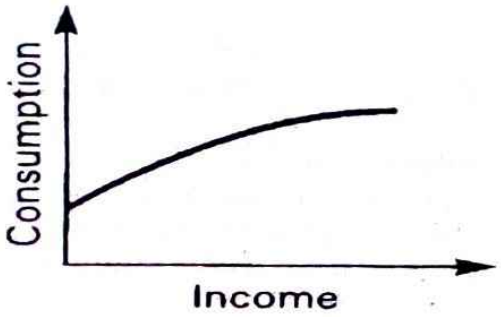
A



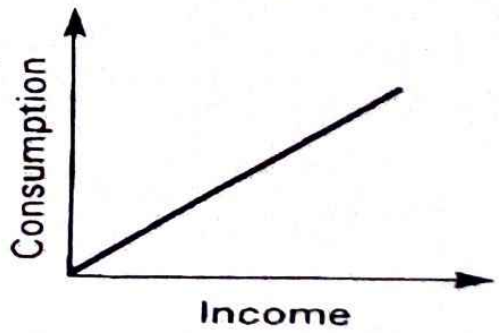
B



C



D



E

RELATED ESSAY QUESTIONS

1. Explain how aggregate supply can be increased (a) in the short run, and (b) in the long run.

2. Distinguish between a movement along the aggregate supply curve, and a shift of the curve to the right.

3. Is an increase in government expenditure likely to raise prices and wages rather than output and employment even in the presence of substantial unemployment and excess capacity?

4. Explain the difference between consumption and investment. Discuss in which category you would place housing and education.

CHAPTER SIX

EQUILIBRIUM NATIONAL INCOME

This chapter is presented in two parts: Part A builds on the basic concepts established in Chapter One, and Part B presents a more advanced treatment of the determination of national income equilibrium.

PART A

The Determination of Equilibrium

We begin with only two sectors - households and firms. Before proceeding with the analysis we should state the assumptions on which it is based as follows:

(a) There are unemployed resources
(b) The techniques of production remain unchanged
(c) The hours worked by each worker remain unchanged
(d) Prices remain constant

Output, income, and employment, therefore will be determined by aggregate demand. Our simple two-sector model has only one injection-investment, and one leakage-savings. Equilibrium requires that leakages should equal injections and in our model that means that planned savings should equal planned investment. Since there is no government sector, there will be no taxation. We also assume that firms pay out all their profits. Personal disposable income, therefore, is equal to national income. The whole of factor income is received by households who can either spend it or save it. There are two approaches to the problem of equilibrium. We can ask:

1. *What level of income will generate sufficient planned saving to equal planned investment?* or
2. *What level of income will generate sufficient planned consumption plus planned investment to buy the whole of current output?*

We shall take each approach in turn, beginning with an explanation of equilibrium in terms of saving and investment.

Income is equal to output so that saving may be regarded as that part of output which consumers are prepared to forgo; that is, to leave for purposes other than consumption. If the amount of total output forgone by consumers is exactly equal to the demands by firms for capital formation (including additions to stocks) then planned saving is equal to

planned investment, total demand is equal to total supply and equilibrium will exist. But if consumers plan to save more or less than firms plan to invest there will be a situation of disequilibrium.

Equilibrium requires that:

$$\begin{matrix}\text{Total value of planned expenditure} \\ \text{(Aggregate demand)}\end{matrix} = \begin{matrix}\text{Total value of planned output} \\ \text{(Aggregate supply)}\end{matrix}$$

At higher levels of income firms will be paying out more in factor incomes than they are receiving back in the form of sales receipts - they will reduce output.

At lower levels of income they will be receiving more in sales receipts than they are paying out in the form of factor incomes - they will expand output.

The short-term adjustments will take the form of changes in the levels of stocks (i.e. unplanned investment or disinvestment).

These same relationships may be seen very clearly in Figure 6.1. In Figure 6.1(i) expenditure is marked on the vertical axis and income is shown on the horizontal axis. We use the same conventions as developed earlier so that the 45° line shows all points of equality, ***Expenditure = Income***. The line CC represents consumption spending at different levels of income, while the C + I line shows total expenditure in a two-sector economy.

Investment amounts to the vertical distance between the CC line and the C + I line. Since we are assuming investment is autonomous the two lines are parallel; investment is the same at all levels of income.

Now the vertical distance between the CC line and the 45° line must indicate the amount of saving at any given level of income. For example, when income is OD, consumption will be FD and saving amounts to FG. At this level of income, investment is FJ. Income is equal to output and it can be seen that only when income is at OB do we have an equilibrium situation where total supply (OB) equals total demand (BK + HK). At this level of income planned savings equals planned investment since both are equal to HK.

At higher levels of income such as OD we note that total expenditure DJ is less than the value of output (GD = OD). This is because planned savings (GF) is greater than planned investment (FJ). Output (= income) will be reduced and will tend to fall to OB.

At lower levels of income such as OA, total expenditure (AM) is greater than the value of planned output (OA = AL). Planned saving is zero, while planned investment is ML. Injections exceed leakages and income will tend to expand to OB.

Figures 2.1(i) top and 2.1(ii) bottom

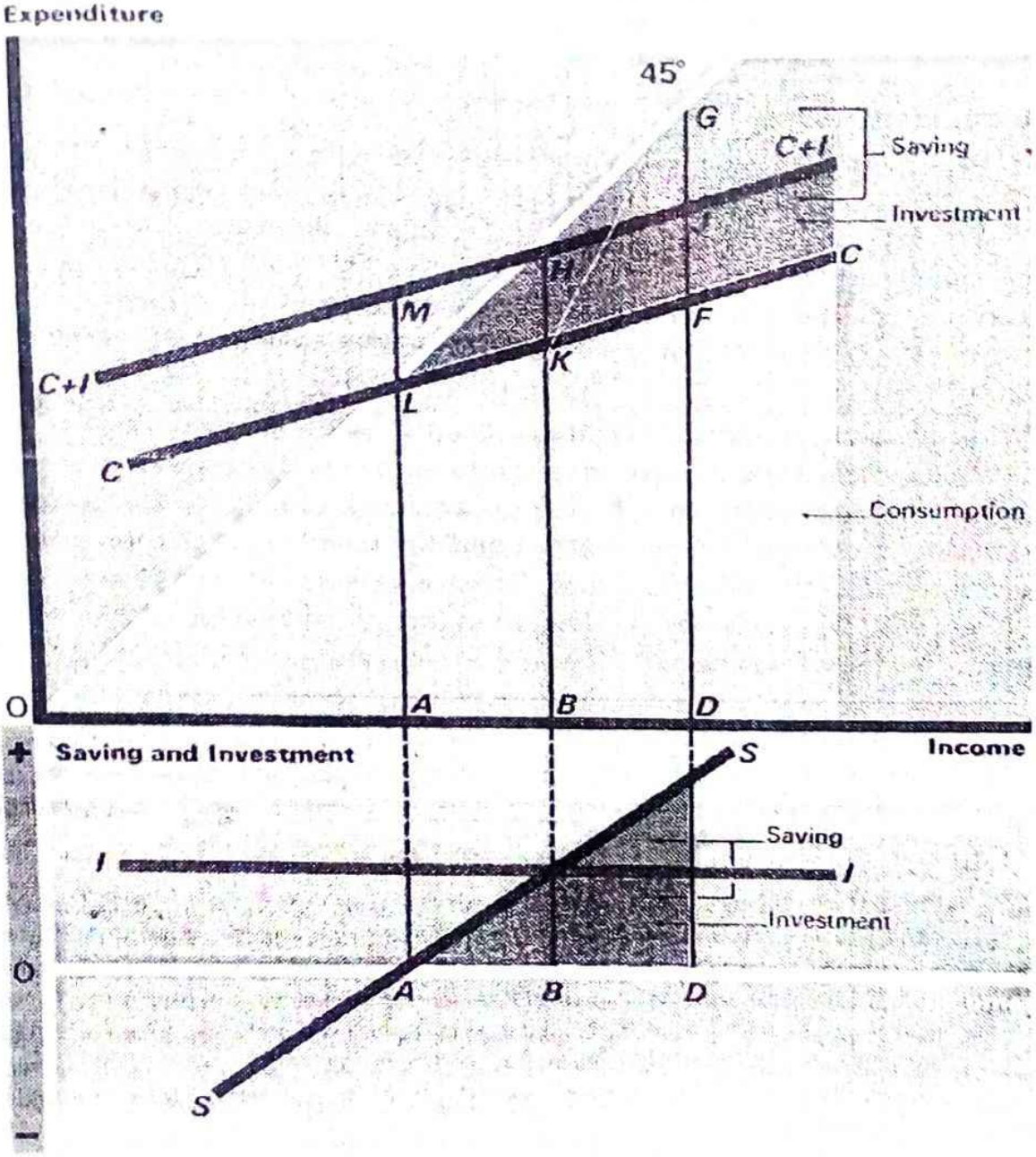


Figure 6.1(ii) looks at the same situation but concentrates the view taken in our first approach; that is, the relationships between planned I and planned S. The savings line is derived from Figure 6.1(i), as explained earlier. The investment line is parallel to the horizontal axis since I is constant. Again it can be seen that OB is the only equilibrium level of income. At higher or lower levels of income, divergences between planned S and planned I will set up changes in production plans which will cause income and output to move towards OB.

Changes in equilibrium

Given the investment and propensity to consume schedules there is one and only one equilibrium level at which income tends to settle. Diagrammatically it has been shown to be determined where the C + I cuts the 45° line. In this position firms will find that they have made the correct output decisions since they will be able to sell all their planned output and there will be no unplanned changes in their stocks.

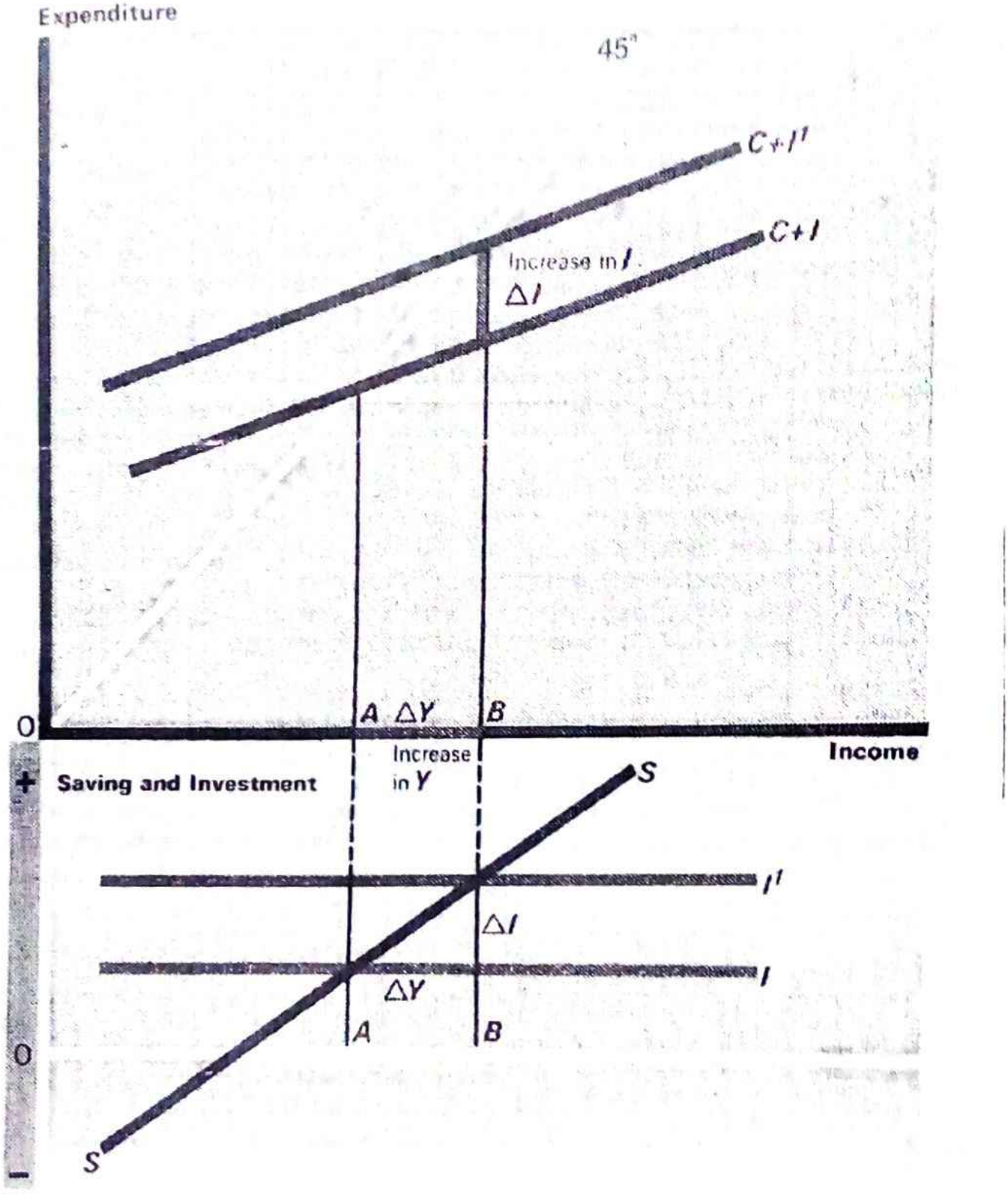
By taking: Y to mean current planned output (= income),
C to mean current planned consumption spending and
I to mean current planned investment spending,
the equilibrium condition is **Y = C + I** and any disequilibrium situation will tend to correct itself by changes in output plans.

But what will happen if there is a change in planned investment? The investment schedule will move and, assuming no change in the savings schedule, a new equilibrium will be established where planned S = planned I. Alternatively we can say that the aggregate demand schedule (C + I) will move and a new equilibrium situation will arise when aggregate demand again equals planned output. These changes are illustrated in Figure 6.2.

The original aggregate demand function is C + I so that the equilibrium level of income is OA where planned expenditure (C + I) equals planned output (OA). Another view of the same situation is presented in Figure 6.2(ii) where equilibrium income is established by the equality of planned S and planned I.

Now assume that planned investment, at all levels of income, increases by an amount ΔI. The demand curve shifts to $C + I^1$ (Figure 6.2(i)) and the investment line from I to I^1 (Figure 6.2(ii)). Income and output will now increase by an amount ΔY to the new equilibrium level OB. As one would expect, an increase in planned investment has led to an increase in output and income, but the interesting feature is that the resulting change in income is much greater than the change in investment (ΔY > ΔT). The nature of the relationship between ΔY and ΔI is explained by one of the most important concepts in economics- the multiplier.

Figure 6.2 (i) top and 2.2(ii) bottom



THE MULTIPLIER

The multiplier describes the fact that ***changes in spending have an impact on income that is greater than the original change in spending***. Since we are dealing with a two-sector economy, we shall explain the multiplier process by means of a change in investment spending. Later we shall see that there is a multiplier effect whenever there is an autonomous increase in the other components of aggregate demand.

Beginning from a position of equilibrium we can suppose that investment spending is increased due to a substantial increase in the programme of house building. Assume that the rate of investment in housing has been fairly stable for some time at ¢1000 million per month and it now increases to ¢1100 million per month. Hence ΔI = ¢100 million The immediate effect of this increase in investment will be an increase in the incomes received by construction workers, who, we assume, had been previously unemployed. Incomes in this industry will rise by ¢100 million per month. If the MFC of the community is constant at 0-8 then ¢80 million of this additional income will be spent and ¢20 million saved. But this is not the end of the matter, because the producers of the goods and services bought by these construction workers will find their incomes increased by ¢80 million This particular group will proceed to spend ¢64 million and save ¢16 million And so it will go on-each round of spending will create additional income, part of which will be passed on.

These rounds of spending will continue until the amounts have become infinitely small. It must be noted that we are equating each round of spending with a corresponding increase in income. This means that we are assuming that businessmen react immediately to changes in spending by changing their production plans.

The eventual increase in income is the sum of the successive rounds of spending generated by the increase in investment. It is, in fact, a geometric series diminishing to infinity. There is a simple formula for summing such a series:

$$\text{Sum of the series} = \frac{\text{First term}}{1 - \text{the common ratio}}$$

The common ratio of the series we are dealing with is 0.8; it is the factor by which each term is multiplied in order to obtain the succeeding term. Hence:

$$S = ¢100 \text{ million} / (1 - 0.8)$$
$$= ¢100 \text{ million} / 0.2$$
$$= \underline{¢500 \text{ million}}$$

As a result of the multiplier process, income has increased by an amount 5 times greater than the change in investment.

$$\text{The Multiplier} = \frac{\text{Eventual change in income}}{\text{Change in investment}} = \frac{\Delta Y}{\Delta I} = \frac{¢500 \text{ million}}{¢100 \text{ million}} = 5$$

But we can put it in more precise terms than this. The common ratio (0.8) used in the formula above is the MPC of the community. The sum of the series might therefore be written,

$$S = \frac{¢100 \text{ million}}{1 - MPC} = ¢100 \text{ million} \times \frac{1}{(1 - MPC)}$$

The last expression in brackets is the multiplier.

$$\text{The Multiplier} = \frac{1}{1-MPC} = \frac{1}{MPS} \text{ (Since MPC + MPS = 1)}$$

The size of the multiplier obviously depends upon the size of the MPC. The larger the MPC (the smaller the MPS) the larger is the multiplier. All we are saying is that the greater the amount of income passed on at each stage, the larger will be each term in the series and hence the larger will be the eventual rise in total income.

SAVINGS AND THE MULTIPLIER

We have seen how an increase in one of the injections (investment) will cause income to expand by a multiple of the change in the level of spending. It will be seen later than any change in either a leakage or an injection will cause income to change until leakages are once again equal to injections. In a two-sector economy a change in investment will cause income to change until planned savings are once again equal to planned investment. We can develop the earlier example to show the change in savings as well as in income.

The increase of ¢100 million in planned investment generates expenditure and income as follows:

Increase in Y	Increase in C	Increase in S
100	80	20
80	64	16
64	51·2	12·8
51·2	40·96	10·24
,	,	,
,	,	,
,	,	,
,	,	,
,	,	,
,	,	,
500	400	100

We have used the formula:

$$\frac{\text{First term}}{1 - \text{common ratio}}$$

to sum the first column to a total of ¢500 million. Exactly the same procedure enables us to obtain the sum of the series for consumption spending and saving. Note that the expansion of income continues until planned saving is again equal to planned investment- both increase by ¢100 million. The economy is now in equilibrium. To sum up:

If there is a change in the level of S or I so that planned S is not equal to planned I then income will change until these planned aggregates are once again equal to one another.

Worked Example

National Income = 1000, Consumption = 600, APC = MPC = 0.6 There is no government or foreign trade; the economy is in equilibrium. What would be the effect on income if planned investment increased by 50?

Solution

Initially,

$$Y = C + S$$
$$1000 = 600 + S$$
$$S = 400 \text{ (therefore } I = 400)$$

Therefore, APS = MPS = 0·4 and the Multiplier $= \frac{1}{0{\cdot}4} = 2\frac{1}{2}$

Investment now increases to 450.

$$\Delta Y = \Delta I \times 2\frac{1}{2}$$
$$= 50 \times 2\frac{1}{2}$$
$$= 125$$

New level of national income = 1125
Note that saving at this level of income will be 0.4 × 1125 = 450 (= Investment).
Income has increased until planned S = planned I.

THE DOWNWARD MULTIPLIER

The multiplier is a most important key to an understanding of economic fluctuations. Not only does it explain how relatively small increases in spending plans can exert considerable upward pressure on income, it also helps to explain why relatively small decreases in the rate of spending might lead to serious falls in income and employment.

The multiplier is a two-edged weapon - it cuts both ways. Just as additional income is re-spent to create still further income, so any cut in spending will reduce income which, in

rent seeking ... more money chasing fewer goods.

turn, will lead to further cuts in spending and income in a cumulative manner. The terms in the geometric series will now have negative signs and the ultimate effect will be that national income falls by ¢500 million. Income will fall until planned saving is again equal to planned investment.

THE PARADOX OF THRIFT

The fact that income must always move to the level where the flows of saving and investment are equal leads to one of the most important paradoxes in economics. The paradox of thrift explains how, under certain circumstances, ***an attempt to increase saving may lead to a fall in total sevings.***

Figure 6.3(i)

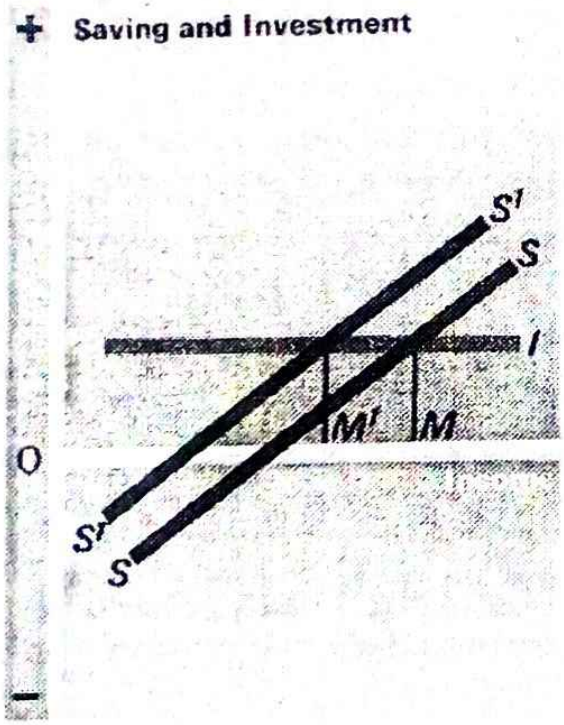
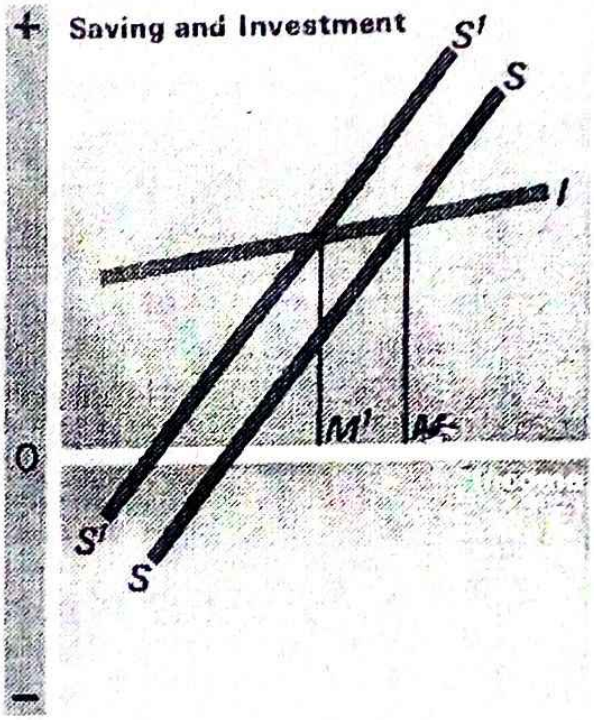


Figure 6.3(ii)



Any attempt to save more which is not matched by an equal willingness to invest more will create a deficiency of demand. Leakages will exceed injections and income will fall to a new equilibrium level. Figure 6.3 illustrates the effects of an increase in the propensity to save. In Figure 6.3(i) we have only autonomous investment and the savings line giving an initial equilibrium level of income OM. An increase in the propensity to save (i.e. people attempt to save more at all levels of income) raises the savings curve to S^1S^1. Income falls to OM^1 and the level of saving remains unchanged.

In Figure 6.3(ii) investment includes both autonomous and induced elements. In this case

an increase in the propensity to save reduces income from OM to OM^1, but the level of saving itself falls. The attempt to save more has meant that less is saved. The explanation for this, of course, is that an increase in the propensity to save is the same thing as a fall in the propensity to consume. This is an autonomous fall in one of the components of aggregate demand which will have downward multiplier effects on income.

Output and Employment

Ever since the Keynesian 'revolution', full employment has ranked highly amongst the goals of government policy. This leads us, therefore, to the idea of a 'desired' level of output - that output which will provide full employment for the labour force. Equilibrium in the market for goods and services obtains when aggregate demand is just sufficient to absorb current output at constant prices. Now it does not follow that an equilibrium situation in the markets for goods and services will produce the desired equilibrium in the market for labour (i.e. full employment). This is one of the most important points to emerge from the Keynesian analysis of income determination.

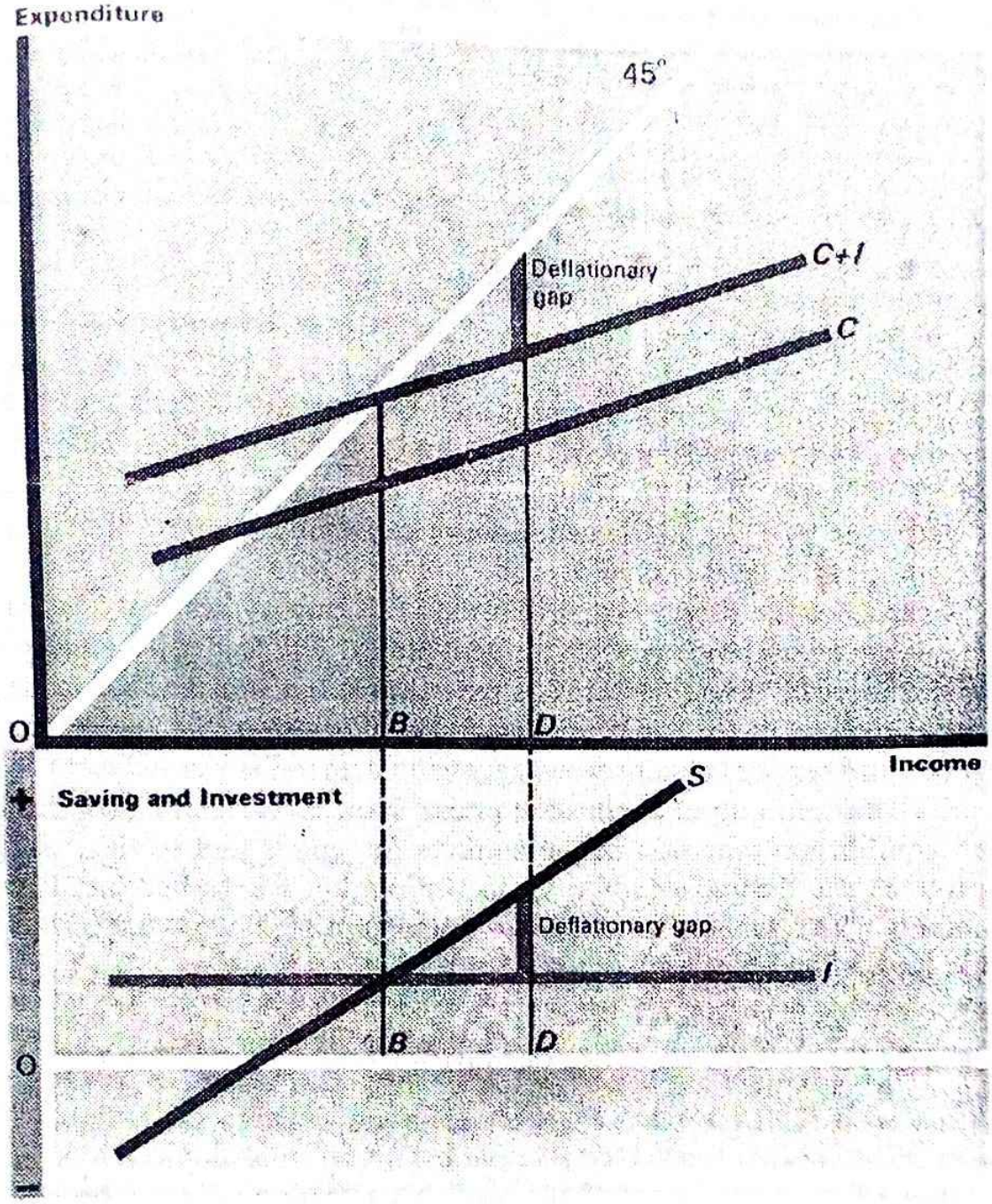
A deficiency of aggregate demand

Suppose we have a given aggregate demand function (C + I) as in Figure 6.4(i). This will produce an equilibrium level of output OB. The output of goods and services required to maintain a full employment situation, however, may be OD. In this case, at the full employment level of income (OD) there is a deficiency of aggregate demand equal to the vertical distance between the C + I line and the 45° line. This deficiency is known as a ***deflationary gap***. If firms were to produce an output equal in value to OD, the deflationary gap measures the value of output which would remain unsold.

With the given aggregate demand schedule the economy would settle in equilibrium at OB and this level of income would be associated with unemployment of labour and under-capacity operation of capital equipment. This situation will persist unless there is an increase in planned C or planned I or both. In the two-sector economy, the deflationary gap represents an excess of planned S over planned I at the full employment level of income. This is clearly seen in Figure 6.4(ii).

The important point to grasp is that there is no guarantee that equilibrium output will be large enough to ensure the full employment of labour and capital. If the propensities to spend by the private sector are insufficient to generate the required level of output, the deflationary gap must be closed by an appropriate public policy.

Figure 6.4 (i) top and 4 (ii) bottom

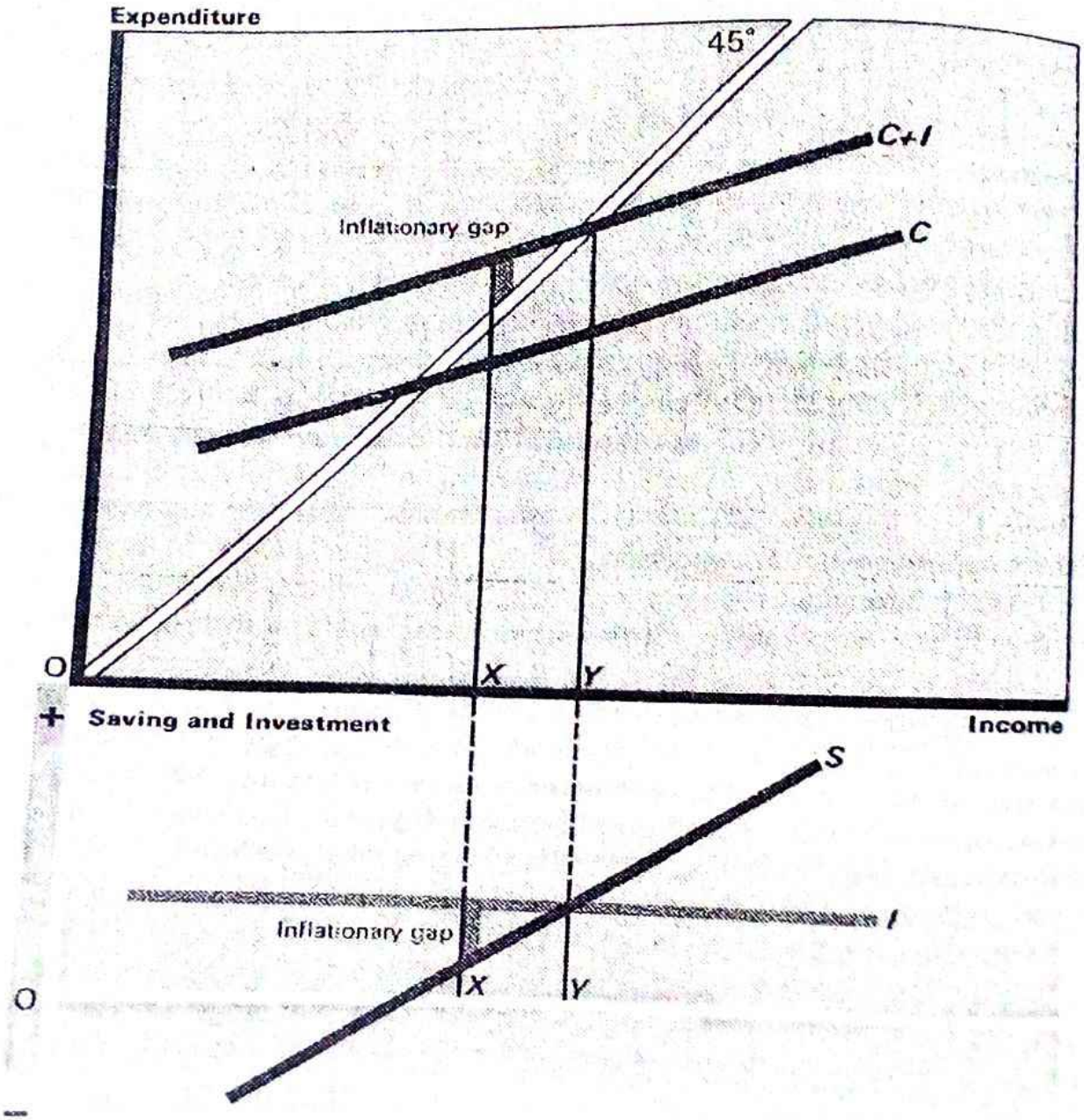


Excess demand

It is possible that planned consumption and planned investment might produce a level of aggregate demand greater than that required to produce the full employment output at constant prices. Such a situation is illustrated in Figure 6.5(i). Equilibrium output is OY, determined at the intersection of the C + I line and the 45° line. Suppose, however, that OX, represents a full employment level of output. At this output, planned spending

exceeds the value of output by the amount identified as the ***inflationary gap*** in the diagram. This gap measures the extent of the excess demand over the maximum output at constant prices. Spending plans in real terms cannot be realized and inflationary pressures will be present in the economy. This excess demand must be eliminated by a cut in C or I or both. Again, it will probably require some deliberate act of public policy to bring about the required changes in spending. As in the previous example, the inflationary gap may be seen in terms of injections and withdrawals. Figure 6.5(ii) shows the inflationary gap as an excess of investment over savings at the full employment level of income.

Figure 6.5 (i) top and 5 (ii) bottom



AN EQUILIBRIUM LEVEL OF EMPLOYMENT

The last section indicated that an equilibrium level of output did not necessarily produce the desired level of employment. It seems logical at this stage to ask what is meant by an equilibrium situation in the market for labour.

Using the traditional supply and demand analysis we would define such an equilibrium as a situation where the demand for labour and the supply of labour were equated at a price (i.e. the level of wages) such that no forces were at work, within the system, tending to change the numbers employed at that wage rate. The classical economists believed that the economy would always tend towards such an equilibrium and, moreover, it would be a full employment equilibrium. If a disequilibrium were to arise, market forces would restore the full employment equilibrium. Unemployment would lead to competition for jobs and force down the wage rate until it became profitable for firms to re-employ the surplus labour.

The experience of persistent unemployment during the 1930s finally discredited these views. The inter-war period demonstrated that there could be an under-employment equilibrium in the market for labour. But, in any case, a reduction in money wages might not bring about an increase in employment. Wages are incomes as well as costs and the fall in wages might cause a fall in aggregate demand which would worsen the employment situation. Instead of tending towards a full employment equilibrium, falling wages could set off a downward spiral of falling demand and rising unemployment.

A disequilibrium in the labour market is also possible where aggregate demand is at a level which exceeds the supply of labour - a situation usually described as one of ***over-full employment.*** It would be a disequilibrium situation because there would be a tendency for prices to rise. The scarcity of labour would cause employers to bid up the price of labour, passing on the increased labour costs in the form of higher prices. A general increase in prices would no doubt lead to demands for higher wages and there would be the beginnings of a wage-price spiral.

The policy aim of governments is a full employment equilibrium, but it is difficult, if not impossible, to provide a precise and meaningful definition of full employment. Whatever meaning is given to the term it clearly relates to some particular relationship between the demand for and supply of labour. It is the interpretations given to these terms, especially the supply of labour, which makes it so difficult to be precise about the meaning and measurement of full employment.

THE SUPPLY OF LABOUR

Strictly speaking this should be defined in terms of the number of man-hours of labour supplied at any given wage rate over some given period of time. The amount of labour supplied can be varied without any change in the numbers of people employed. Existing workers may work longer hours (e.g. overtime) or they may be placed on 'short-time' (i.e.

working three or four days each week). Over the longer period the aggregate supply of labour from any given labour force will tend to fall if there are pressures for a shorter working week and longer holidays.

In discussions of employment and unemployment, however, it is usual to refer to the supply of labour in terms of the number of persons seeking work. Since there are limits to the amount of overtime the labour force will accept, and limits to the amount of short-time working which can be offered, it is reasonable to expect that the numbers employed will vary with total output.

The level of employment will depend, at least in part, on how many of a given population want to work. This ***participation rate***, as it is called, is an important concept since it is subject to short-term variation. In other words, there is a degree of elasticity in the aggregate supply of labour even in the short term, and this causes difficulties when we attempt to measure the true extent of unemployment (i.e. the amount of surplus labour).

The participation rate is influenced by the current demand for labour. When the unemployment level is high more married women may try to enter the labour force in order to supplement the family income. Similar conditions in the labour market may persuade many young people to stay on in further education in order to acquire better qualifications or to postpone entry to the labour market until conditions are more favourable. On the other hand, in good times when jobs are plentiful more people, especially married women and retired people seeking part-time work, will be tempted to enter the labour force. Thus, the participation rate will vary with the state of the economy.

In advanced economies like the UK the extent of unemployment is measured by reference to the number of persons who are formally registered as unemployed. This figure will understate the amount of surplus labour since registration is also a requirement for obtaining unemployment benefits. People seeking work, but not entitled to such benefits do not have the same incentive to register. This group will include married women who do not pay the full rate of national insurance, young people who have not yet paid the qualifying amount of national insurance, and a fairly large number of people who will take part-time jobs when the labour market is favourable, but will not register as being available for work at other times.

In some countries the extent of unemployment is measured by means of household surveys in which people are asked if they are actually looking for work. If the sample of households is adequate this method probably gives a better indication of unemployment in the sense of the numbers actively seeking work but unable to find it. If this number is then added to the number in employment we have one indication of the aggregate supply of labour measured in terms of the potential labour force.

THE DEMAND FOR LABOUR

The demand for labour is a derived demand. Labour is not demanded for its own sake, but for the goods and services it can produce. Just as there are problems in trying to

EMMANUEL OPOKU

measure the supply of labour so there are similar problems in trying to assess the demand. The number of persons actually in employment is one indicator of the current demand for labour. Movements in the numbers at work give some idea of the direction in which the demand for labour is moving. A further useful statistic is the number of unfilled vacancies. The official register of unfilled vacancies, however, is likely to understate the demand for labour since not all employers register their vacancies and those who do may not register all their vacancies. We do not know, therefore, the full extent of the demand for labour.

In advanced economies the official statistics of registered unemployed and unfilled vacancies help to give them a picture of trends.

A major problem in trying to apply the elementary techniques of supply and demand to the total labour market is that demand and supply may not refer to the same thing. Employers may be demanding labour of a different type to that which is available. The demand for labour is derived from the demands for a great variety of goods and services and the nature of these demands is always changing. The supply of labour comprises a wide variety of skills and abilities. The changing demands for goods and services give rise to a continually changing pattern of demand for labour. Given the real world immobilities, both occupational and geographical, in the labour force it is apparent that there will always be some unemployed people while, at the same time, some employers are looking for labour. This feature of the labour market is known as ***frictional unemployment***.

FULL EMPLOYMENT

The difficulties associated with the interpretation and measurement of the supply of and demand for labour should serve to remind us that economics, as a science, is still no fully developed. The fact that many economic terms have come into common use should not delude us into thinking that we know all there is to know about such things. Full employment is one such term. What does it mean?

On the simplest level it could mean that the total available supply of labour was completely absorbed into gainful employment. We have already noted that, in the real world, this cannot possibly be achieved. Since labour is not perfectly mobile between places and occupations, there are many separate labour markets each with its own supply and demand conditions. A definition of full employment which requires that the demand for and supply of labour be equated in each and every labour market is not tenable.

An alternative definition would require the sum of the demands in all the labour markets to be equal to the sum of the supplies, even though in several of these markets there may be an excess of demand over supply or supply over demand. This is the meaning usually given to full employment. It is a definition which accepts the existence of some unrequited demand and some unused supply. The unemployment which is consistent with a state of full employment will be frictional unemployment.

Although we have a definition of full employment it is a very different matter to say when such a situation exists. Some authorities would say that full employment exists when there is a balance between the unfilled vacancies and the numbers unemployed. Unfortunately these statistics do not provide an accurate picture of the supply and demand situation. In any case these concepts are aggregates which could mask uneven occupational and geographical distributions of unemployment. A balance between the numbers looking for work and the number of jobs available to them is not in itself sufficient evidence of full employment since it is conceivable that a situation might arise where there were, say, two million out of work and two million vacancies. This could hardly be described a full employment. Any acceptable definition of full employment demands that the existing amount of unemployment be relatively small.

Another way of assessing the employment situation is to calculate the probable amount of frictional unemployment and then compare it with the number of workers unemployed. Lord Beveridge in his classic work Full Employment in a Free Society (1944) used this technique and estimated that something like 3 per cent of the working population might be unemployed at any one time for 'frictional' reasons.

Given the possible variations in the participation rate and the inadequacy of data on the demand for labour it is very difficult to obtain a precise measure of frictional unemployment. Some guide as to the nature of the unemployment problem might be obtained from the statistics showing the length of time which unemployed persons have been on the register. If the average duration of unemployment is fairly short this might be taken as an indication that the unemployment is largely of the frictional type.

In practice the authorities must use the available evidence of registered unemployed, unfilled vacancies and the duration of unemployment as rough guides in assessing whether there is an excess supply or excess demand for labour. Full employment, however, is such an important aspect of policy that political judgements must also be considered.

The Government Sector

We now introduce a government sector into the model and examine the manner in which government income and expenditure affect the national income. The government can expand total demand through its purchases of goods and services, or by stimulating private spending by means of tax reductions. Similarly it can reduce total demand by decreasing its own spending or by increasing taxation, or both. Government spending may be treated in the same way as investment-it is an injection into the circular flow of income. Taxation may be regarded as a leakage from that circular flow.

The budgetary framework

The annual Budget sets out the planned income and expenditure of the government for the year ahead together with a statement of the revenue and expenditure for the past financial year. The original purpose of the Budget was to raise just sufficient revenue to cover public expenditure; it was regarded as most desirable that the Budget should be balanced. Nowadays, the Budget is used as the major instrument of economic policy and a budget surplus or deficit may be deliberately planned in order to bring about economic changes.

This deliberate manipulation of G and T is known as ***fiscal policy*** which may be formally defined as ***'the policy that government receipts and expenditures should be consciously planned, particularly in their aggregate amounts so as to effect beneficial changes in the overall level of incomes, prices, and employment'***.

The government and income

The introduction of government calls for a substantial modification of our simple model of the economy. Government expenditure (G) is treated as being autonomously determined since it is subject to political decision. We regard it, therefore, as being independent of income. Thus, our model now has two injections into the circular flow of income, I and G.

Taxation (T), both direct and indirect, represents a leakage from the system. Taxes, unlike government spending, cannot be treated as autonomous since the revenue from taxation bears a direct relationship to income, and tax revenue is a function of income.

Indirect taxes cause spending at market prices to exceed spending at factor cost so that the whole of current spending does not go on to generate incomes. Direct taxes are a compulsory withdrawal of income from firms and households. Our model now has two leakages, S and T.

It is necessary to take account of subsidies which, since they cause the market price to be less than factor cost, can be regarded as negative taxes. We use T_i to stand for net indirect taxation (i.e. indirect taxes-subsidies) and T_d to stand for direct taxes. The expression for aggregate demand, therefore, is

$$C + I + G - T_i$$

Equilibrium obtains when this planned expenditure at factor cost is equal to the value of planned output at factor cost. This planned output may be expressed in terms of the factor incomes which it will generate. These incomes may be disposed of in three ways.

1. Part will be spent on consumption (C).
2. Part will be saved (S).
3. Part will be taken in direct taxation (T_d).

Planned output (= income), therefore, may be expressed in the form,

$$C + S + T_d$$

Equilibrium requires,

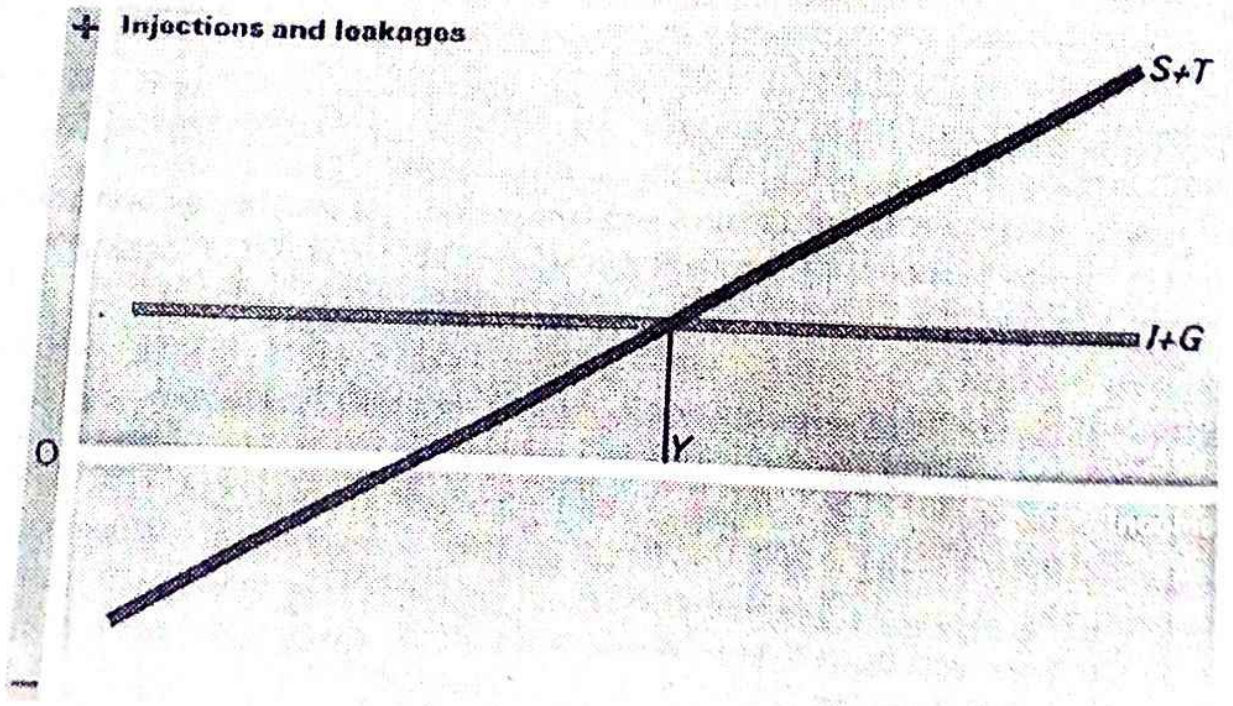
$$C + I + G - T_i = C + S + T_d;$$

i.e. $I + G = S + T_d + T_i$

(Planned injections) = (Planned leakages)

The introduction of a government sector means that an equality between planned S and planned I is no longer a necessary condition for equilibrium. A discrepancy between S and I can be offset by an equal discrepancy between G and T (where $T = T_d + T_i$). It must also be noted that a balanced budget is not a necessary condition for equilibrium; all that is required is that planned injections = planned leakages. This is illustrated in Figure 6.6, where the equilibrium level of income is seen to be OY.

Figure 6.6



The existence of the public sector also calls for a modification of the consumption function. Consumption expenditure is clearly related to disposable income (Y_d - the

income available to households for saving or spending. In the two-sector economy Y_d is the same thing as national income (Y) since all income is paid out and there is no taxation leakage. In our present model the situation is

$$\text{Disposable Income } (Y_d) = \text{National Income } (Y) - \text{Direct Taxes } (T_d) + \text{Transfer Payments} - \text{Undistributed profits}$$

and $$C = f(Y_d)$$

Nevertheless it is necessary to express C as a function of Y for purposes of analysis. We wish to know how much planned consumption spending will be generated by any particular level of planned output. For example, if we know that C = ¾ of disposable income, and disposable income is ⅔ of national income we have,

$$C = \tfrac{3}{4} \times \tfrac{2}{3} Y = \tfrac{1}{2} Y \text{ (i.e. APC} = \tfrac{1}{2})$$
$$\text{and } S = \tfrac{1}{4} \times \tfrac{2}{3} Y = \tfrac{1}{6} Y \text{ (i.e. APS} = \tfrac{1}{6})$$

It is also necessary to express the marginal propensities to consume and save as proportions of changes in national income. This is made clear in the worked examples later in this chapter.

The government sector and the multiplier

Changes in government expenditure and in rates of taxation will have multiplier effects since they will cause changes in aggregate spending which are not related to changes in income.

EFFECTS OF CHANGES IN GOVERNMENT SPENDING

The government may alter the level of income by changing its own spending on goods and services, that is by changing the level of G in the equilibrium equation. In order to simplify the analysis of these changes we must make some assumptions:

1. We assume that the rates of taxation (both direct and indirect) are unchanged. In other words, the marginal rate of taxation (t) is constant.
2. Changes in G are assumed to have no influence on I.
3. MPC (c) and MPS (s) are constant.
4. There are no transfer payments.

Now if government expenditure is increased by an amount ΔG it will give rise to a multiple expansion of income equal to ΔY. The series of increments in income generated by the increase in G will be

$$\Delta G + \Delta G(k) + \Delta G(k)^2 + \Delta G(k)^3 + \Delta G(k)^4 + \ldots$$

where k is the proportion of each increment of income which is spent.

The sum of the series (ΔY) is

$$\frac{\Delta G}{1-k} \qquad \Delta G\left(\frac{1}{1-k}\right)$$

so that $\left(\frac{1}{1-k}\right)$ is the multiplier.

Now k = 1 – marginal rate of leakage = 1 – (s + t). The multiplier, therefore, is

$$\frac{1}{1-(1-(s+t))} \qquad \frac{1}{s+t} \qquad \frac{1}{\text{marginal rate of leakage}}$$

Hence

$$\Delta Y = \Delta G\left(\frac{1}{s+t}\right)$$

In fact, it is not likely that tax rates will remain unchanged. Direct taxes are progressive so that the rate of tax leakage will increase as income increases. The multiplier therefore will become smaller as income increases.

Worked example

An economy is in equilibrium and national income = 1000. Rates of taxation are constant and equal to \ of gross income. MPC = APC = $^2/_3$ of disposable income. What would be the effect on national income of an increase of 100 in government spending on goods and services?

Solution

Saving $= \frac{1}{3} \times \frac{3}{4}Y = \frac{1}{4}Y$

Therefore, APS = MPS = $\frac{1}{4}$; marginal rate of taxation = $\frac{1}{4}$.

$$\therefore \text{Multiplier} = \frac{1}{s+t} = \frac{1}{\frac{1}{4}+\frac{1}{4}} = 2$$

$\Delta Y = 2 \times \Delta G$

$= 2 \times 100$

$= \underline{200}$ Income will increase by 200

EFFECTS OF CHANGES IN RATES OF TAXATION

Changes in the rates of taxation may also be used as a means of influencing aggregate demand. The effects of such changes are subject to much uncertainty. An increase in direct taxation will reduce disposable income but the eventual effect on spending depends upon the extent to which people are prepared to maintain their expenditures by reducing their savings. An increase in the rates of taxation may alter the propensity to consume and hence the multiplier. The effects also depend upon the nature of the tax increase. If it falls

mainly on the less prosperous section of the community, where the margin of saving is smaller, it will obviously have a much greater effect on spending than would be the case if the more affluent groups were to bear the main brunt of the increase in taxation. A reduction in taxation will also have uncertain effects for similar reasons. Changes in direct taxes may also have effects upon investment - this is discussed later.

Changes in indirect taxation will also affect consumption. The effects will depend upon the elasticities of demand for the goods in question and on whether the changes in tax rates affect the propensity to consume. If the taxes on goods such as petrol or tobacco are increased, expenditures on these goods tend to increase since the demands are very inelastic. This may reduce spending on other goods and services so that aggregate demand is reduced. But consumers may decide to maintain their spending in real terms by cutting back their saving.

If we again make simplifying assumptions by specifying constant I and G and a constant marginal propensity to consume, it is possible to derive the multiplier effects of changes in the rate of taxation. The first point to note is that the given change in tax revenues will have a smaller multiplier effect than the same change in G or I. The reason is that a change in taxation will lead to a corresponding change in disposable income, but, since part of disposable income is saved, the full extent of the change in taxation does not fall on spending. For example, if $^3/_4$ of disposable income is spent, a reduction of the tax burden of ¢1 million will lead to an initial change in spending of only ¢750,000.

The second problem in dealing with the multiplier effects of tax changes is that the value of the multiplier itself will be affected. The value oft in the denominator alters when we change the rates of taxation. The effects of changes in the rates of taxation may be illustrated by means of a fairly simple arithmetical example. We shall assume that changes in taxation leave G unaffected, that MPC remains constant, and that rates of taxation are the same at all levels of income. We must further assume that the only tax is an income tax and that there are no transfer payments.

Worked example

$Y = 1000$
Planned $I = 300$
Planned $G = 100$
Planned $T = 200$ i.e. MPT = 0·2 and $Y_d = 0{\cdot}8Y$
Planned $S = 200$ i.e. APS = $0{\cdot}25Y_d$ or $0{\cdot}2Y$ MPS = 0·2
Planned $C = 600$ i.e. APC = $0{\cdot}75Y_d$ or $0{\cdot}6Y$ MPC = 0·6

This is an equilibrium situation because,

Planned injections = Planned leakages
$I + G$ $S + T$

Now assume that the government increases the rates of taxation to 0·4Y. What will be the effects on income?

Solution

1. Disposable income now equals 0.6Y and since APS is constant

$$S = 0{\cdot}25 \times 0{\cdot}6Y = 0{\cdot}15Y.$$

$$\text{In equilibrium } I + G = S + T$$
$$300 + 100 = 0{\cdot}15Y + 0{\cdot}4Y$$
$$0{\cdot}55Y = 400$$
$$Y = 727{\cdot}27$$

Therefore Income will fall by approximately 272·7.

2. Alternatively, we can say that the initial effects of the increase in taxation will be to reduce disposable income from 0.8Y to 0.6Y; that is, from 800 to 600. Therefore, initially, C would fall from 600 to 0.75 × 600 = 450. The multiplier effects of this fall in C can now be calculated.

$$\Delta Y = \text{Change in } C \times \text{the multiplier}$$
$$= -150 \times \frac{1}{s + t}$$
$$= -150 \times \frac{1}{0{\cdot}15 + 0{\cdot}4}$$
$$= -272{\cdot}7 \text{ approx.}$$

TRANSFER PAYMENTS

For purposes of simplification transfer payments have been assumed to be zero in the preceding analysis, but it was made clear in the introduction to this chapter that they are an important element in disposable income. Transfer payments financed from taxation are clearly a means of redistributing income. They are not factor incomes and do not contribute directly to national income. Nevertheless they do influence national income since, via their impact on disposable income, they affect the propensity to consume. They may be regarded as negative direct taxes. Even when transfer payments are financed wholly by direct taxes they may still have an expansionary effect on aggregate demand if the MPCs of the recipients are greater than those of the taxpayers from whom the revenue is raised.

Fiscal Policy

The deliberate use of government income and expenditure as an active instrument of economic policy stems essentially from the work of John Maynard Keynes during the Great Depression. Until the 1930s the traditional argument had been that the State, like the individual, could not afford to spend more than it received (through taxation). A deficit Budget, it was held, would lead to inflation and increase the National Debt; both regarded as most undesirable developments. These views were attacked by Keynes and others who argued that a deficit Budget will create demand, but, where the economy is operating at less than full employment, this extra demand will call forth extra output rather than increase prices. In the 1930s unemployment rates were more than 20 per cent so that fears of inflation seemed very inappropriate.

The basic idea behind modern fiscal policy is simple enough. We have seen that in a two-sector economy an excess of planned saving over planned investment will lead to a cumulative downward movement of income. Where planned leakages are greater than planned injections at the full employment level of output, the economy will settle at an equilibrium with men and machines lying idle. But it is also possible that planned injections might be greater than planned leakages when resources are fully employed so that there would be strong upward pressures on prices.

Fiscal policy aims to use G and T as compensating devices to deal with situations where aggregate demand is either excessive or deficient at the full employment level of income. It is helpful to divide fiscal measures into two types, ***automatic*** and ***discretionary***.

AUTOMATIC STABILISERS

There are some propensities in government spending and income that play a compensating role in the economy quite independently of any direct political intervention. The reason for this is that taxation revenues and a large part of public expenditure are both closely related to activity in the private sector.

(a) Taxation revenue at given tax rates is a function of national income and will tend to rise as income rises and fall as income falls. Where direct taxes are progressive, the tax yield will rise faster than income, and, as income falls, tax yields will fall even faster. Assuming that the government does not change its own spending, progressive taxes will act as a stabilizing influence, slowing down the growth of aggregate demand when income is rising, and reducing the fall in aggregate demand when income is falling.

(b) Transfer payments can also serve as stabilizing devices. Some transfer payments such as family allowances and sickness benefits are not affected when income changes, but others such as unemployment benefits and supplementary benefits tend to vary inversely with income and output. When output is falling and unemployment rising these payments prevent disposable incomes falling as fast as factor incomes. Similarly when income and output are rising these payments will decline and national insurance contributions will

increase so that aggregate demand does not rise as fast as factor incomes.

The advantage of automatic stabilizers is that, since they are built into the economic system, they require no legislative approval before they can take effect and no new administrative machinery is needed which might delay their implementation. Their effect is to counter autonomous changes whether the authorities are aware of them or not. The disadvantages of these built-in stabilizers is that they do not come into effect until some destabilizing change has actually taken place - they cannot prevent the initial change and, although they do have some stabilizing influence, they could stabilize the economy at a high unemployment level. They work both ways so that they could operate to delay a much needed recovery from a depression.

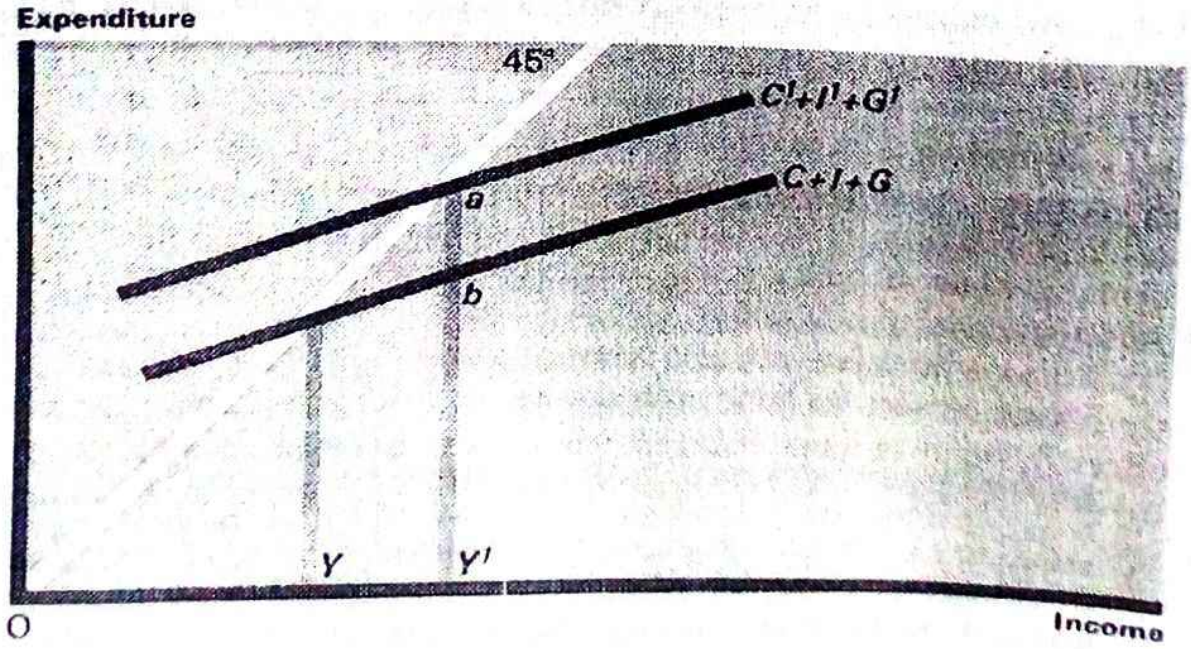
Automatic stabilizers partially compensate autonomous changes in GNP, but it may be necessary to fully compensate such changes if price stability and full employment are to be achieved. This will require public action of a discretionary nature.

DISCRETIONARY FISCAL POLICY

Let us suppose that national income is in equilibrium at a level which is not providing for the full employment of the nation's labour force; there is a deficiency of aggregate demand at constant prices.

In Figure 6.7 equilibrium income is at OY where the aggregate demand curve intersects the 45° line. Suppose that full employment calls for an output equal to OY'. To achieve this position planned spending must be increased to the level shown by the C' + I' + G' line. How can fiscal measures bring about this increase in aggregate demand?

Figure 6.7



(a) Tax changes

By means of fiscal policy the government can influence any or all the components of the aggregate demand function (C + I + G).

The consumption component may be increased by reductions in direct and indirect taxes. A reduction in direct taxes increases disposable income and leaves people more to spend. The multiplier effects will depend upon the size of the marginal propensity to consume. If the tax cuts are biased in favour of the lower income groups the multiplier effect will be greater. A cut in indirect taxes will have a similar effect - a given level of disposable income will now purchase more goods and services. Provided G and I remain unchanged, tax reductions will cause an upward shift of the aggregate demand function.

Tax reductions might also be used to stimulate private investment. Cuts in income tax and indirect taxes will improve business prospects and lead to more induced investment. Cuts in profits tax will improve the profitability of investment. Tax reductions might also take the form of increased tax allowances on investment projects. If these measures are successful, investment will increase and the aggregate demand curve will move upwards.

(b) Change in government spending

The most direct means of increasing aggregate demand is an expansion of public spending. Providing the rates of taxation are not increased, an increase in government spending on goods and services has a direct effect on aggregate demand with the appropriate multiplier effects. This increased spending will raise income initially by the full amount of spending, whereas, as we have already noted, tax reductions of equivalent money value will not increase spending to the same extent since part of the addition to disposable income will be saved.

Alternatively the government may increase its outlays by raising the levels of the various welfare benefits. Higher social security payments will have an immediate effect on demand. Since the bulk of such payments are received by persons with relatively high propensities to consume there would be a substantial effect on consumption spending.

Such measures may be used to raise the C + I + G line in Figure 6.7 until full employment income OY^1 is achieved. The increase in expenditure required for this purpose is ab and the multiplier will be

$$\frac{YY^1}{ab}$$

When the problem is one of excess demand at full employment income the measures discussed above can be put into reverse, but there are some serious problems associated with policies to increase taxation and reduce government spending. These are discussed in the next section.

FISCAL POLICY - SOME PROBLEMS

Fiscal policy, in common with other economic policy instruments, has its advantages and disadvantages.

- It has the advantage of being a very direct instrument. Changes in G and T will have immediate effects on aggregate demand, although the extent of these effects is rather uncertain because of likely changes in the propensity to consume.
- Fiscal policy may also be used in a discriminatory manner to alter the allocation of resources both geographically and industrially. Government expenditure may be biased towards projects in development areas or towards certain industries (e.g. poverty alleviation projects in rural areas). Tax burdens may be reduced for firms locating themselves in development areas. The government may decide to place heavier tax burdens on service industries than manufacturing industries if it believes, for example, that exports are mainly dependent upon the latter.
- A major use of fiscal policy is in the pursuit of social and political objectives, especially those which aim to reduce inequalities of wealth and opportunity. The application of progressive taxation to income and wealth, and the redistribution of the revenues in the form of social security benefits, will tend to reduce the extent of these inequalities.

There are disadvantages.

- Some major part of government expenditure is geared to important social and political programmes which make for a high degree of inflexibility in a downward direction. Where the policy requirement is for a reduction of aggregate demand it will be difficult to make a substantial use of G for this purpose. Any reduction in the expenditures on education, health services, pensions and other social security measures will be very strongly resisted. Unless the situation is very critical, the most that can be hoped for is some slowing down in plans for expansion by postponing the implementation of certain programmes. This lack of flexibility in the short run is particularly applicable to public investment which is largely concerned with long-term projects such as road construction, school building, hospital building and so on. Such projects cannot be 'switched on and off as a means of varying aggregate demand in the short period.
- The time interval between the decision to build new roads and the time when large-scale expenditure is actually undertaken may be a matter of years - the planning and organising period will be a long one. Once the work is begun it will be difficult and costly to postpone or reschedule the work.
- Major changes in taxation also take a considerable time to implement since they usually involve an immense amount of administrative work.
- Fiscal policy is a powerful instrument of control, but it is not very suitable for 'fine tuning' - major changes cannot be carried out more frequently than once a year.
- The effectiveness of tax changes has also been seriously questioned in recent years. While tax reductions will certainly increase consumer spending their effectiveness as a stimulant to private investment is more uncertain. Much depends upon the climate

of business expectations. Recent experience has shown that tax reductions on quite a massive scale can fail to produce a major increase in private investment when businessmen are not optimistic about future prospects. Increases in taxes aimed at reducing aggregate demand may also affect aggregate supply if they have unfavourable effects on the incentives to work and invest. In this respect direct taxes such as income tax and profits tax are more likely to have such disincentive effects.

- The use of indirect taxation as a means of restricting demand creates problems because such taxes affect prices and an increase in the general price level is almost certain to provoke reaction by organised labour. The proved effectiveness of union action in obtaining compensating wage increases when the cost of living increases now seriously weakens the effectiveness of an increase in indirect taxes as a means of restraining demand.

FISCAL POLICY AND THE NATIONAL DEBT

The use of fiscal policy has important implications in respect of the national debt. Where the government is increasing its expenditure but not increasing taxation, or where it is holding its expenditure but reducing taxation, it must be obtaining the necessary funds by borrowing. It will be running a budget deficit, and, in so doing, increasing the national debt. Like any firm or household, a government cannot spend money it does not have. To finance a deficit the government must borrow by selling bonds to households, firms and banks.

Is the National Debt a Burden ?

The existence of public debt gives rise to much confusion because many people view it in the same light as a private debt. When a firm or household borrows, it incurs a liability in that interest payments on the debt and its eventual repayment will involve a real loss of resources by that household or firm. When the government borrows internally (i.e. from domestic lenders) the community as a whole does not incur any liability. Interest payments to bondholders and the repayment of the debt simply involve transfers of funds from some members of the national community (taxpayers or purchasers of new bonds) to other members of the same community (holders of maturing bonds). The internal national debt may be compared to borrowing within a family. If one brother borrows ¢5 million from another brother, the wealth and income of the family is in no way affected.

Any part of the national debt which is owed to foreign citizens, however, does constitute a national burden. Interest payments and capital repayments to foreigners represent claims on the resources of the home country - such payments can only be met by exports, thus leaving fewer goods for consumption at home.

Does borrowing transfer the burden ?

A common misconception with regard to the national debt is that the burden of current government spending is in some way transferred to future generations. The construction of roadworks which is financed by selling bonds due for repayment, say, in 25 years' time will sometimes be condemned as 'unfair' because the repayment of this debt places the burden of meeting the cost of current road construction on a future generation of citizens.

This is not the case at all. The real cost of constructing roads is borne by the community undertaking the work. The true cost of these roads is the desirable foregone alternative uses of the resources. Resources committed to building roads might have been used to build houses, power stations, technical colleges and so on. The opportunity cost of the new roads should be seen in terms of the sacrifice of alternatives incurred at the time the resources were committed. The debt inherited by future generations will not be a 'cost', but merely an instrument for transferring incomes within the community.

Can we have a perpetual public debt?

The government does not have to worry about paying off the existing debt since it makes no call on the nation's resources. When a particular loan is due for repayment the government can make a new issue of bonds and use the proceeds to repay the holders of the maturing bonds. The debt may last forever provided the government raises sufficient revenue to cover the interest payments. In this respect the total interest cost must be judged against the size of the GNP since this is the total tax base. Using this comparison it can be seen that the very large national debt of a country like the UK, for example, is a smaller 'burden' than their very much smaller pre-war national debt.

Does a large national debt have any unfavourable effect ?

A large national debt presents the government with the task of raising large sums of money to meet the interest charges. These charges have to be met out of tax revenues and they may be a cause of the tax burden reaching levels which have disincentive effects. Large annual interest payments may also lead to an 'undesirable' redistribution of income from the lower income groups to the higher income groups. This would be the case if bonds were held mainly by wealthier groups and taxes paid mainly by lower income groups.

Heavy government borrowing through large sales of securities is likely to drive down the prices of securities and raise the rate of interest. This could have harmful effects on investment.

If we assume that there is some upper limit to the tax burden that a government is prepared to impose, the heavy interest charges of a large national debt may restrict the government's ability to carry out or expand some of its programmes in such fields as education, roads, hospitals, etc.

Foreign Trade and National Income

Exports and imports

It is now time to introduce another sector into our model of the economic system. We have proceeded to this present stage of the analysis using a 'closed' system, that is, an economy with no flows of goods and services from within its borders to other nations and from other nations to itself. We are not likely to find such an economy in the real world and we must now take account of the relationship between a country's international transactions and its national income. Exports constitute an injection into and imports a leakage from the circular flow of income.

Equilibrium - an open economy

For an open economy the equilibrium equation is

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

The brackets placed round (X - M) draw attention to the fact that the difference between them (which may be positive or negative) is the balance of payments on current account. The equation may be rearranged as follows,

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

This shows that the balance of payments position is directly related to national income and domestic spending. The balance on current account is equal to the national income minus public and private spending on consumption and investment. There is, in fact, a two-way relationship. Changes in exports and imports affect income, and changes in income affect the balance of payments account. The equation above refers to the equilibrium level of income. It tells us the necessary conditions for planned spending to equal planned output at constant prices. The balance of payments introduces the idea of an external equilibrium where the expenditure on imports is exactly equal to the revenue from exports at constant prices. There does not appear to be any reason why the conditions necessary for internal equilibrium should produce an equilibrium situation in the current balance of payments. This may be clearer if we look at the equilibrium level of income from the point of view of planned leakages and planned injections.

Planned spending $= C + I + G + X - M$

Planned output (= income) $= C + S + T$

Equilibrium requires, $C + I + G + X - M = C + S + T$, i.e.

$I + G + X = S + T + M$

(Injections) (Leakages)

It can be seen that there is no need for any pair of injections and leakages to be equal. Savings need not equal investment, government spending need not equal taxation and imports do not have to be equal to exports. The requirement is that total leakages equal total injections. For example, the following values provide an overall equilibrium but there will be deficits on the government account and on the balance of payments

$$\frac{I}{100} + \frac{G}{100} + \frac{X}{50} = \frac{S}{100} + \frac{T}{75} + \frac{M}{75}$$

In the long run a government must achieve an equilibrium situation in its international transactions and this will entail the use of certain measures. In the meantime we should note that the task of obtaining equilibrium conditions in the markets for goods and services at home (i.e. stable prices), in the labour market (i.e. full employment) and in the balance of payments (i.e. X = M) will obviously present the government with major problems. It is most likely that the pursuit of any one objective, say, full employment, will conflict with the objectives of achieving the other goals.

Foreign trade and the multiplier

Just as we can project a schedule showing the relationship between consumption and income so it is possible to project the relationship between imports and income. If we relate movements in imports to movements in income we obtain the propensity to import or the import function. The average propensity to import will give us the level of imports associated with any given level of income and may be represented by

$$\frac{M}{Y}$$

The marginal propensity to import (MPM or m) will tell us what proportion of any increase in income will be spent on foreign goods and services and may be represented by

$$\frac{\Delta M}{\Delta Y}$$

For example, if, when Y increase by 100, M increases by 10, the marginal propensity to import is 0.1. This MPM is an important concept since it indicates how much of a change in our national income will be transmitted to other countries through variations in our purchases of their goods and services. Similarly exports will be dependent upon the rest of the world's propensity to import.

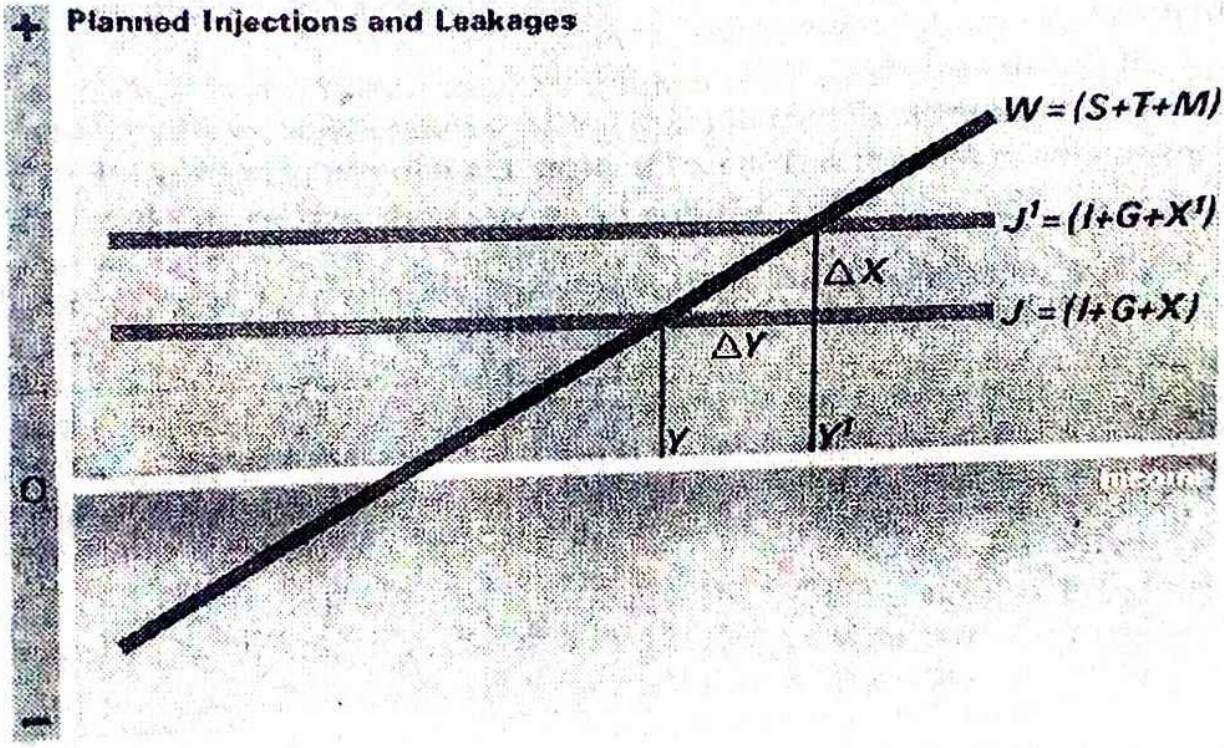
The marginal propensity to import is a part of the marginal rate of leakage and, as such, will influence the size of the multiplier. Moving from a closed economy to an open economy has introduced a further leakage (imports) and hence reduced the size of the multiplier. The import leakage means that a smaller proportion of any increase in income is now passed on to generate further increases in income. The multiplier expression must now be adjusted to take account of imports.

$$\text{The multiplier} = \frac{1}{s + t + m} = \frac{1}{\text{marginal rate of leakage}}$$

where s = marginal propensity to save
t = marginal rate of taxation
m = marginal propensity to import.

Note that this multiplier applies to any autonomous change in spending. Thus, changes in the levels of exports, investment, government spending or autonomous consumption will all have multiplier effects on income. The introduction of an international sector has given us a ***foreign trade multiplier*** since changes in exports will have magnified effects on national income

Figure 6.8



Income changes and foreign trade

Figure 6.8 shows the aggregate leakages and aggregate injections for an open economy. ***W*** is the total leakage function and is obtained by adding together the schedules of savings, imports and taxation revenues. ***J*** is the total injection function obtained by adding together the investment, exports and government spending schedules. Initially equilibrium is at OY, where planned injections equal planned leakages. Now assume that exports increase X to X^1. The planned injection line rises to J^1 and the new equilibrium level of income will be established at OY^1. The multiplier, which is the eventual increase in income divided by the originating change in spending, is

$$\frac{\Delta Y}{\Delta X}$$

Several important points emerge from the foregoing analysis.

(a) It has been established that one of the main causes of instability in the level of income and output is the variability of private investment. The introduction of foreign trade now adds another cause of instability - changes in the level of exports. The foreign trade multiplier is a most important relationship for those countries, such as the UK, where exports account for a large percentage of total output (i.e. 20 per cent or more). A rise in exports, through the multiplier effects, can be the cause of a boom, or begin a recovery from a depression, but, equally, a substantial fall in exports can lead a country into a recession.

(b) Changes in the level of income will have effects on the balance of payments. The nature of these effects depends on whether the change in income arises from internal or external causes.

If there is a rise in export sales, due, perhaps, to trade liberalization measures, domestic incomes will rise until the increase in planned injections has been matched by an increase in planned leakages. But only part of this increase in leakages will be due to increased imports; savings and tax revenues will also rise. Hence exports will rise by more than imports and the balance of payments will 'improve'. Conversely the multiplier effects of a fall in exports would reduce income, and imports would fall by a smaller amount than exports. The balance of payments would 'worsen'.

When the change in income arises from causes which have a domestic origin, the effects will be different. An increase in income brought about by a rise in investment would worsen the balance of payments position since imports would increase while exports remain unchanged. The reverse would apply when investment (or government spending) fell.

(c) The analysis so far has ignored foreign repercussions of changes in country's exports and imports. If a country is a major exporter and importer (i.e. it accounts for a significant proportion of world trade), there are likely to be 'feedback' effects whenever its exports or imports change substantially. Let us suppose that A stands for the home country and B for the rest of the world (or those countries trading with A).

Now assume that A's income increases due to an increase in G or I or in the propensity to consume. The rise in A's income will bring about an increase in its imports from B, and B's income will rise. This increase in B's income will tend to increase its imports from A. There will be a further rise in A's income and a further rise in its imports from B. And so the process will go on until the multiplier effects have worked themselves out. The dimensions of these effects will depend upon the respective marginal propensities to import and the extent of the savings and taxation

leakages. Again we must note that these changes can work in the opposite direction with multiplier effect downwards.

There will also be international feedback effects arising from any autonomous changes in A's exports. Suppose A's exports increase due to an increasing preference for its products in B. Now the rise in B's imports will cause its income to fall and this will tend to reduce its imports from A. But the initial increase in A's exports will have increased its income through the multiplier process and hence its imports from B will tend to increase. This will offset to some extent the fall in B's income. The ultimate effects will again depend upon the marginal propensities to consume and the magnitude of the multiplier effects in each sector.

We have ignored the possibilities of changes in the prices of exports and imports and concentrated on the real income effects. In fact, price changes are an important element in the adjustment processes in the real world. In certain circumstances countries will resort to a deliberate policy of changing the relative prices of exports and imports (devaluation) rather than allow an equilibrium situation to arise through income changes.

Some worked examples

(a) In a closed economy, net investment expenditure is at the rate of £1000 million. APC = MPC = 0.8 of disposable income. There is no government activity.

(a) Calculate the equilibrium level of national income.

(b) What would be the effect of increasing the rate of investment by 50 per cent?

(c) In the original situation, an income tax is introduced which raises £500m. per annum, and this is accompanied by government expenditure of £500m. per annum. What is the new equilibrium level of national income? Assume that APS, MPS and the level of investment remain unchanged.

Solution:

(a) In equilibrium, Planned Savings = Planned Investment
and, therefore, Savings = £1000m.
Now, APS = MPS = $\frac{1}{5}Y$; i.e. $\frac{1}{5}Y$ = £1000m.
therefore, Y = £5000m.

(b) The multiplier in this economy, $= \frac{1}{\text{MPS}} = \frac{1}{\frac{1}{5}} = 5$;

therefore,

$$\Delta Y = 5\Delta I$$
$$= 5 \times £500\text{m.}$$
$$= £2\,500\text{m.}$$

New level of national income = £5 000m. + £2 500m.
= £7 500m.

(c) In equilibrium, Planned injections = Planned leakages;
i.e. $I + G = S + T$,
i.e. £1 000m. + £500m. = S + £500m.
therefore, S = £1 000m.;
but $S = \frac{1}{5}$ disposable Y;
therefore,

$$S = \tfrac{1}{5}(Y - T)$$
$$£1\,000\text{m.} = \tfrac{1}{5}(Y - £500\text{m.})$$
$$\tfrac{1}{5}Y = £1\,100\text{m.}$$
$$Y = £5\,500\text{m.}$$

ALTERNATIVE TREATMENT

(a) In equilibrium

$$Y = C + I$$
$$= 0{\cdot}8Y + £1{\cdot}000\text{m.}$$
$$0{\cdot}2Y = £1\,000\text{m.}$$
$$Y = £5\,000\text{m.}$$

(c) In equilibrium

$$Y = C + I + G$$
$$= 0{\cdot}8(Y - £500\text{m.}) + £1\,000\text{m.} + £500\text{m.}$$
$$= 0{\cdot}8Y + £1\,100\text{m.}$$
$$0{\cdot}2Y = £1\,100\text{m.}$$
$$Y = £5\,500\text{m.}$$

(b) In an imaginary economy, there is no foreign trade and no government activity. APC = MPC = $^4/_5$. In equilibrium, consumption expenditure is £20 000m.

(a) What is the level of investment expenditure?

(b) What is the value of the multiplier?

(c) Suppose investment spending remains unchanged but both APC and MPC fall to $^3/_5$. What is the new equilibrium level of national income?

Solution:

(a) Since APC = MPC = $\frac{4}{5}$, then APS = MPS = $\frac{1}{5}$.
Since this is a closed economy with no government activity,

$$C = \tfrac{4}{5}Y;$$

i.e. £20 000m. $= \frac{4}{5}Y$

and $Y =$ £25 000m.,

therefore $S =$ £5000m.

Now in equilibrium $S = I$

therefore, $\underline{I = \text{£5000m.}}$.

(b) The multiplier is the reciprocal of the sum of the leakages (expressed as fractions of income). In this case the only leakage is savings.

The multiplier therefore $= \dfrac{1}{\text{MPS}} = \dfrac{1}{\frac{1}{5}} = 5$

(c) When APC and MPC fall from $\frac{4}{5}$ to $\frac{3}{5}$, then APS and MPS increase from $\frac{1}{5}$ to $\frac{2}{5}$.
The immediate effect is that

Planned Savings > Planned Investment.

But adjustments of income will take place until

Planned injections = Planned leakages; i.e.

Investment = Savings

Since investment does not change,

£5000m. $= S$.

But $S = \frac{2}{5}Y$;

therefore, $\underline{Y = \text{£12 500m.}}$.

(c) In a closed economy in equilibrium, consumption spending is at the rate of £75m. per annum and investment spending is £25m. per annum. Consumption is a constant proportion of disposable income whatever the level of income. There is no government activity.

(i) (a) What is the level of national income?
(b) What is the value of the multiplier?

(ii) Assume now that government activity is undertaken. Taxation is levied at the rate of $^1/_5$ of all incomes and government spending on goods and services is held at £25m. per annum.
(a) What is the new level of national income?
(b) What is the budget surplus or deficit?

(iii) Assume now that international trade is introduced into the situation (ii). Exports are constant at £25m. per annum, and imports are always $^1/_6$ of consumption spending.
(a) What is the new level of national income?
(b) What is the surplus or deficit on the balance of payments?

Solution:

(i) (*a*) In a closed economy in equilibrium (no government activity).

$$Y = C + I$$
$$Y = £75\text{m.} + £25\text{m.}$$
$$\underline{Y = £100\text{m.}}$$

(*b*) Since C is a constant proportion of disposable Y,

$$\text{APS} = \text{MPS} = \tfrac{1}{4};$$

$$\text{therefore, Multiplier} = \frac{1}{\text{MPS}} = 4.$$

(ii) (*a*) In equilibrium, Injections = Leakages;

i.e. $$I + G = S + T \qquad (1)$$

Now $S = \frac{1}{4}$ of disposable income, and disposable income = $\frac{4}{5}Y$, therefore $S = \frac{1}{4} \times \frac{4}{5}Y = \frac{1}{5}Y$.

Substituting in 1 we have

$$£25\text{m.} + £25\text{m.} = \tfrac{1}{5}Y + \tfrac{1}{5}Y$$
$$\tfrac{2}{5}Y = £50\text{m.}$$
$$\underline{Y = £125\text{m.}}$$

(*b*) Taxation $= \frac{1}{5}Y = £25\text{m.}$

Government spending = £25m.

Budget is balanced.

(iii) (*a*) This could be tackled in the same way as (ii) (*a*) by equating injections and leakages. For purposes of illustration we use a slightly different approach.

In equilibrium $Y = C + I + G + (X - M)$ — — — (1)

Now $C = \frac{3}{4}$ disposable income

$$= \tfrac{3}{4} \times \tfrac{4}{5}Y \qquad = \tfrac{3}{5}Y$$

and $M = \frac{1}{6}C = \frac{1}{6} \times \frac{3}{5}Y = \frac{1}{10}Y$.

Substituting in (1) we have

$$Y = \tfrac{3}{5}Y + 25 + 25 + 25 - \tfrac{1}{10}Y$$
$$\tfrac{1}{2}Y = £75\text{m.}$$
$$\underline{Y = £150\text{m.}}$$

(*b*) Exports = £25m.

Imports $= \frac{1}{10}Y = £15\text{m.}$

Balance of Payments surplus = £10m.

PART B

This section presents a more academic treatment of the topic. Students are therefore advised to make sure they grasp the principles in Part A before they study this section

Points of Perspective

There is a fundamental difference between the **neo-classical** (or **pre-Keynesian**) view of 'how the economy works', and the view of Keynes himself. According to the older view, the operation of the price mechanism in each of the individual markets which make up the economic system automatically tends towards a situation in which there is full employment of all resources, including labour, in the economy - in other words towards a **full employment equilibrium**. Monetarists adopt essentially the same view of the stabilizing nature of market forces (and the **destabilizing** effects of government intervention).

In contrast, the Keynesians believe that the price system contains no self-regulating mechanism that automatically produces full employment, and that government intervention can be a stabilizing force in the economy. Left to itself, a market economy may tend towards an equilibrium in which there is either **mass unemployment** resulting from **deficient demand,** or **demand-pull inflation** in conditions of **'over-full' employment and excess demand.**

Underlying concepts

1 The interrelationships between markets

A market economy is of course an interrelated system of markets. At the macro-economic level we usually consider such markets in highly aggregated form, dividing the economy into three great markets: the goods market (or product market) in which output is produced, the labour market (which is a part of the wider factor market) and the money markets. We are concentrating attention on the interrelationships between the goods market and the labour market - the markets of the 'real' economy. Thus we largely ignore here the role of money in the economy but in subsequent Chapters we shall consider the effects of money and the rate of interest on the level of output in the goods market.

2 Equilibrium national income

Earlier, we introduced the concept of equilibrium in the context of a single market within an economy. We define equilibrium as a state of rest, or a condition in which the plans of all the economic agents in the economic model are fulfilled and consistent with each other. We shall continue to use this concept of equilibrium in examining the conditions necessary to achieve an equilibrium level of national income or output within the goods

market of an economy. Nevertheless, equilibrium is essentially a state towards which the economy is heading; the equilibrium will not necessarily be reached. It is more realistic to think of the economy as being in a state of disequilibrium, tending, in the absence of outside disturbances or 'shocks', towards the equilibrium level of national income. Essentially, national income and output will be in equilibrium when the planned or intended aggregate money demand (AMD) of all the economic agents in the economy in the current period equals the output (or income) produced in the previous period.

Essential information

Figure 6.9: The Keynesian Consumption Function

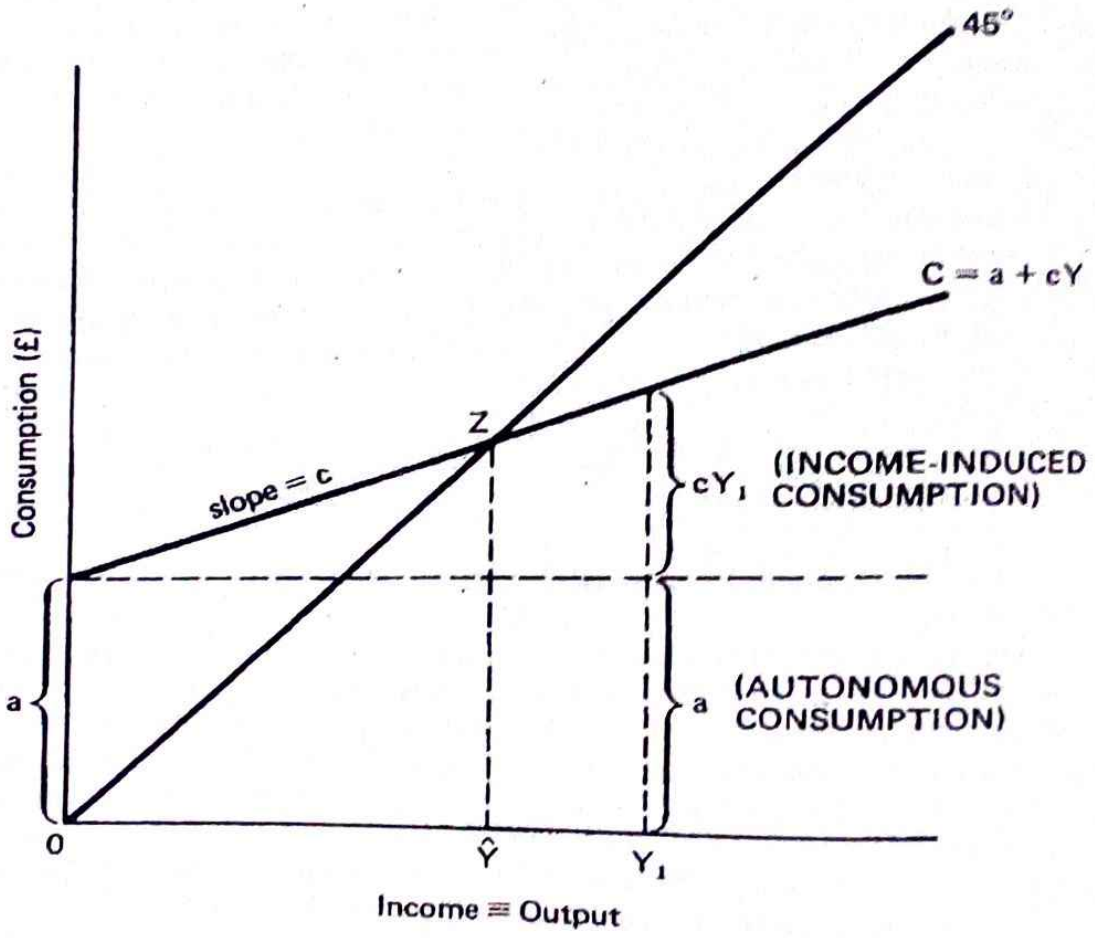
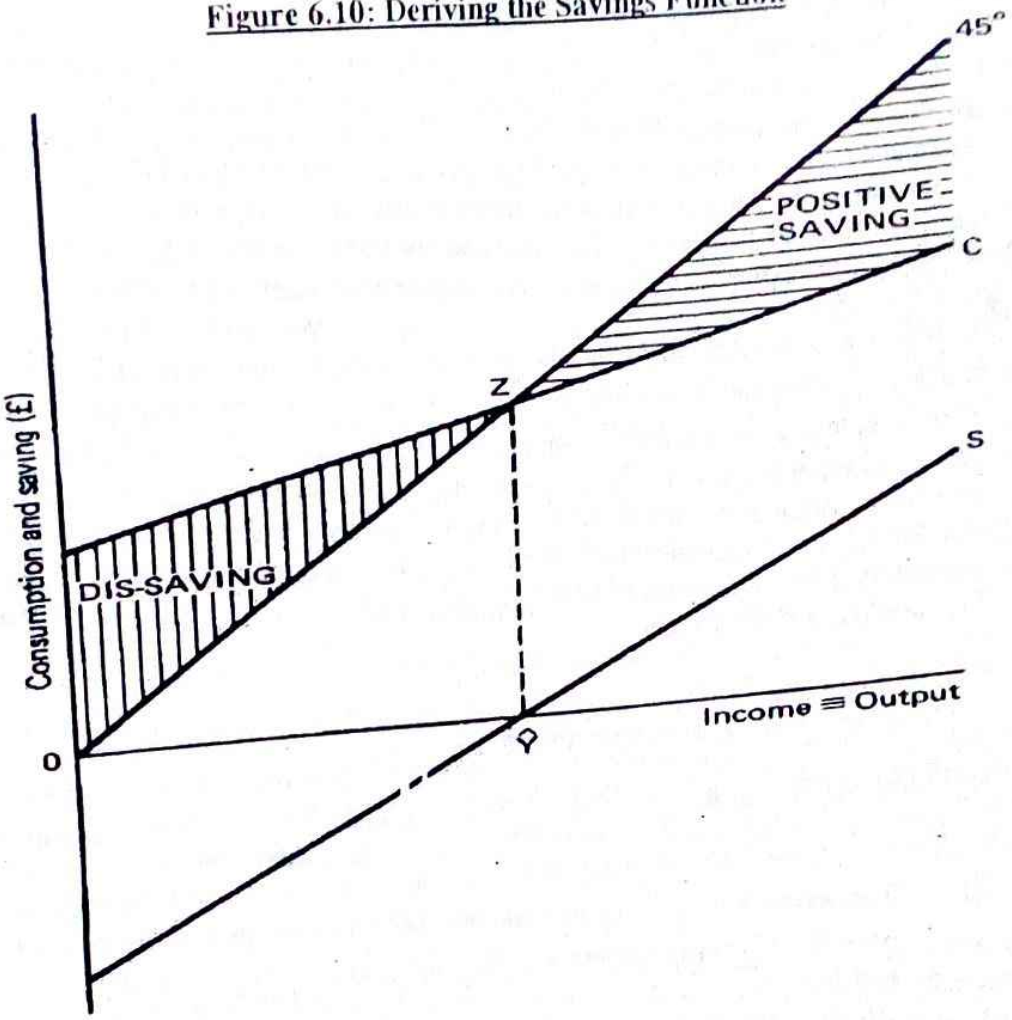


Figure 6.10: Deriving the Savings Function



1 The consumption function

Figure 6.9, which illustrates the Keynesian consumption function, also introduces the importance of the '45° line' in national income and expenditure models of the economy. Providing that the axes of the diagram are measuring in the same scale, a line drawn at 45° to origin locates all points at which output or income on the horizontal axis equals expenditure measured on the vertical axis.

Figure 6.9 also shows that planned consumption (C) is made of two elements:

(A) autonomous consumption This is the part of consumption which does not vary with the level of income. In Figure 6.9, autonomous consumption is equal to the vertical distance (a) at all levels of income.

(B) Income-induced consumption Because the consumption function in Figure 6.9 is drawn as a straight line (a linear consumption function) it can be expressed as the equation:

$$C = a + cY$$

At any level of income, cY measures income-induced consumption, since an increase in income of ΔY induces an increase in planned consumption equal to $c\ \Delta Y$. The greater the value of (c), the steeper will be the slope of the consumption function and the larger the increase in consumption resulting from an increase in income. In fact (c) is the measure of the marginal propensity to consume, a concept to which we shall shortly return.

In Figure 6.9, the consumption function crosses the 45° line at point Z, indicating that at the level of income $\hat{Y}$ households plan to consume all their income. At any level of income below $\hat{Y}$, planned consumption is greater than income, from which it follows that planned saving must be negative! Similarly, at any level of income above $\hat{Y}$ households plan to consume less than their income, and planned saving is therefore positive. This relationship between consumption and saving is clearly shown in Figure 6.10, both in the separately plotted savings function (S) and in the shading between the consumption function (C) and the 45° line.

2 The propensities to consume and save

In order properly to understand the Keynesian consumption and saving functions, it is necessary to introduce and define the propensities to consume and save:

(i) The average propensity to consume (APC) is the proportion of income which households plan to consume. (Formally, $\mathbf{APC} = {}^{C}/_{Y}$) If income is ¢10 million and households plan to consume ¢8 million, the APC is 0.8. When the APC is 0.8, the average propensity to save (APS) must be 0.2, since the APC and APS always add up to unity. In Figure 6.9, the APC falls as income rises, though total consumption of course rises. APC is greater than unity at all levels of income below $\hat{Y}$, equals unity at $\hat{Y}$, and falls below unity at levels of income above $\hat{Y}$. Conversely, the APS rises from negative to positive values as income rises, equaling zero at $\hat{Y}$.

(ii) The marginal propensity to consume (MPC) is the proportion of the last unit of income which households intend to consume. Formally,

$$\mathbf{MPC} = {}^{\Delta C}/_{\Delta Y} \quad \text{and} \quad \mathbf{MPS} = {}^{\Delta S}/_{\Delta Y}$$

Again, the MPC and the marginal propensity to save (MPS) must total unity. As we have already indicated, the slope (c) of the consumption function in Figure 6.9 is the marginal propensity to consume. In this diagram, the MPC is assumed to be constant at all levels of income. Since however, the MPC is likely to decrease as income rises (though remaining between unity and zero), it would be more realistic to draw a consumption function whose slope diminishes at higher levels of income.

(iii) The relationship between the average and marginal propensity to consume: Returning to our previous example in which household income is ¢10 million, planned consumption ¢8 million, and the APC 0.8, we shall now assume that if income increases by ¢1 million to ¢11 million, planned consumption will rise by just ¢600,000. The MPC is 0.6 and MPC < APC. The APC must now fall as income increases, in this case from 0.8 when income is ¢10 million to 0.78 when income is ¢11 million. Since APC falls as income rises, it follows that the MPC must be less than the APC.

3 Equilibrium national income revisited

We can now represent our simple two-sector model of the economy in just three equations:

$C = a + cY$: The consumption function

$I = \bar{I}$: Autonomous investment

$Y = C + I$: The equilibrium condition for the whole model

It is vital to avoid confusing the equilibrium equation $Y = C + I$ with accounting identities such as $Y \equiv C + S$, $E \equiv C + I$, and $AMD \equiv C + I$. At first sight they appear very similar, but the meanings are completely different! The accounting identities hold true at **all** levels of income, but, as we shall see, this is not the case with the equilibrium equation.

We can illustrate the concept of equilibrium national income in one of two ways, using either the upper or the lower panel of Figure 6.11. For the time being we shall refer only to the upper panel. The crucial difference between Figure 6.11 and our earlier diagrams is the inclusion of autonomous investment, $I = \bar{I}$, in the diagram. (Remember, we are treating investment as a constant, the value of which is determined outside our model.)

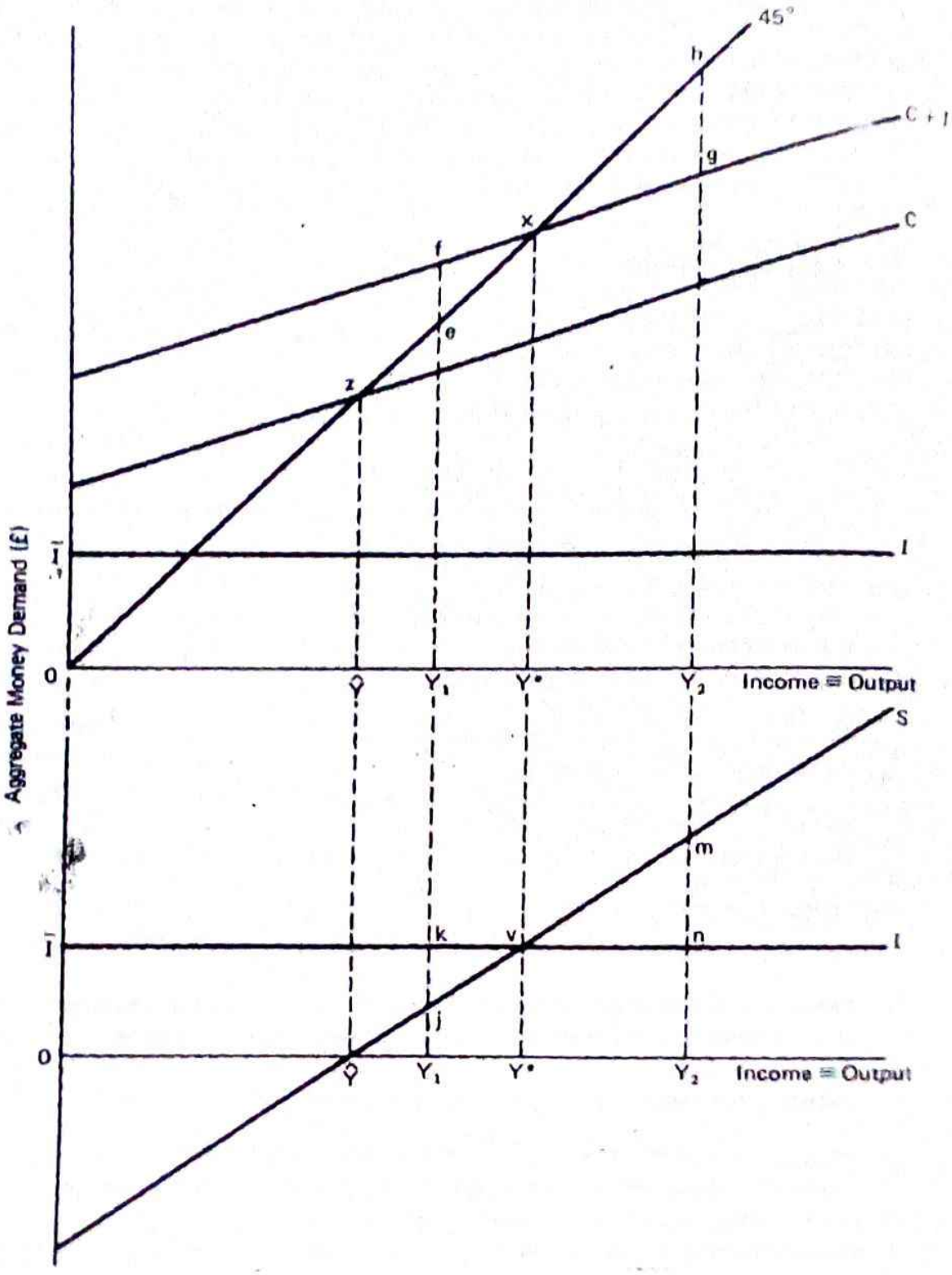
Using the identity $AMD = C + I$, we simply add autonomous investment (I) to the consumption function (C) to obtain the AMD function (labelled C + I).

Let us now suppose that the level of income or output actually produced in the economy is Y_1. Making use of the property of the 45° line, we can also show this level of income or output by the vertical line Y_1e. At this level of income or output, aggregate demand, shown by the line Y_1f, is greater than the output available.

Thus, at income Y_1, $Y < C + I$. This is a disequilibrium condition, since the planned demand of the households and firms is greater than the output produced.

In a similar way we can show that a level of income such as Y_2 is also a disequilibrium level of income, since at income Y_2, $Y > C + I$, which again is a disequilibrium condition. At Y_2, actual output Y_2h exceeds aggregate demand Y_2g by the amount gh.

Figure 6.11: Equilibrium National Income (A KEYNESIAN CROSS DIAGRAM)



At Y_1, firms can only meet the planned demand in the immediate period by **destocking**.

whereas at Y_2 they will experience **unintended stock accumulation.** Because, in each situation, demand differs from the output firms have actually produced we now assume that firms react by changing the output they plan to produce in the next period. More precisely, we assume that firms react to destocking by increasing output to meet demand, and they react to unintended stock accumulation by reducing output. (For the time being we are also assuming that spare capacity exists so that firms can increase output, and that prices remain constant.)

If, when $Y < C + I$, firms increase output

and, when $Y > C + I$, firms decrease output,

it follows that only when $Y = C + I$ will output remain unchanged.

In Figure 6.11, national income is in equilibrium at Y^*, the only level of income where:

$$Y = C + I.$$

Only at this level of income are the plans of the households and firms fulfilled and consistent with each other. At any other level of income or output, unintended destocking or stock accumulation creates an incentive for firms to change the level of output.

Figure 6.11 is an example of a **'Keynesian cross' diagram** in which equilibrium is determined at point x where the AMD or aggregate demand function crosses the 45° line. In the most simple and unrealistic version of the Keynesian theory we assume that output quickly responds to any change in demand. This means that the 45° line is the aggregate supply function in the model. Thus the equilibrium condition can also be stated as:

aggregate demand = aggregate supply

Be sure to avoid confusing point x on the AMD function with point z on the consumption function. The equilibrium level of income is determined at x, whereas z merely determines the single level of income at which APC = 1!

4. Saving and Investment

The lower panel of Figure 6.11 illustrates an alternative way of stating the equilibrium condition of national income. You will notice that the equilibrium level of income Y^* is located where the savings function (S) crosses the investment function (I). Thus the equilibrium condition can be written as:

Planned Saving = Planned Investment

or $S = I$

It is important to stress that this statement of the equilibrium condition is merely an alternative to $Y = C + I$, adding nothing new to the model. This is shown when we derive

this equation by substituting the ex ante accounting identity into the equilibrium condition:

substituting $Y = C + S$ into $Y = C + I$ we get $C + S = C + I$ or $S = I$

Nevertheless this method of expressing the equilibrium condition possesses the advantage of showing that income is in equilibrium when injections of demand into the circular flow of income equal leakages or withdrawals of demand. In a simple two-sector model of the economy, saving is the only leakage and investment is the only injection. More generally we can write the equilibrium condition as:

Planned Leakages = Planned Injections

It is vital to avoid confusing the equilibrium condition S = I with the ex post identity which states that actual saving will always equal actual investment whatever the level of income. Consider once again the level of income Y_2, but this time in the lower panel of Figure 6.11. Planned saving exceeds planned investment by the amount nm. You should notice that nm equals gh in the upper panel, which we earlier defined as unintended stock accumulation at this level of income. Actual investment at any level of income is defined by the identity:

I ACTUAL = I PLANNED + I UNPLANNED

and unplanned investment occurs precisely when firms 'invest' in unsold stocks of finished goods. We can now explain why actual investment equals actual saving at the level of income Y_2, even though planned saving is greater than planned investment. In the first place, households are able to fulfil their savings plans, so actual saving equals planned saving. However, this creates the situation in which firms accumulate unsold stocks (resulting in unplanned investment) exactly equal to the excess of saving over planned investment! It follows from the way we have defined actual investment that actual savings and investment are equal. We shall leave it as an exercise for the reader to work out why the identity still holds at the income level Y_1 where destocking occurs and unplanned investment is negative.

5. The equilibrium condition in a four-sector economy

We shall complete the section by extending our model in a very simple way to include a **government sector** and an **overseas** or **foreign trade sector**. Government spending (G) and overseas demand for the country's exports (X) represent additional injections of demand into the circular flow of income, whereas taxation (T) and import demand (M) are leakages. The AMD identity now becomes:

$$AMD \equiv C + I + G - T + X - M$$

In order to keep the model as simple as possible, we shall treat the values of G, T, X and

M as being autonomously determined outside the model, just as we have already treated I in this way. This is a highly artificial assumption since we might expect some at least of these components of aggregate demand to be related to the level of income. However, we shall delay relaxing this assumption until we examine the multiplier theory in the next section. We are also rather artificially assuming that households plan consumption decisions out of pre-tax income and that the level of taxation, T, is not determined by the level of income. In the next section we see how the model changes when we assume that consumption decisions are made out of post-tax disposable income.

Since we are making the assumption that the components of aggregate demand, with the exception of consumption, are autonomously determined outside the model, the AMD function drawn in Figure 6.12a has the slope of the consumption function (the MPC), and its position is determined by adding the values of I, G and X to, and subtracting the values of T and M from, the consumption function. The equilibrium condition for the model now becomes:

$$Y = C + I + G - T + X - M$$

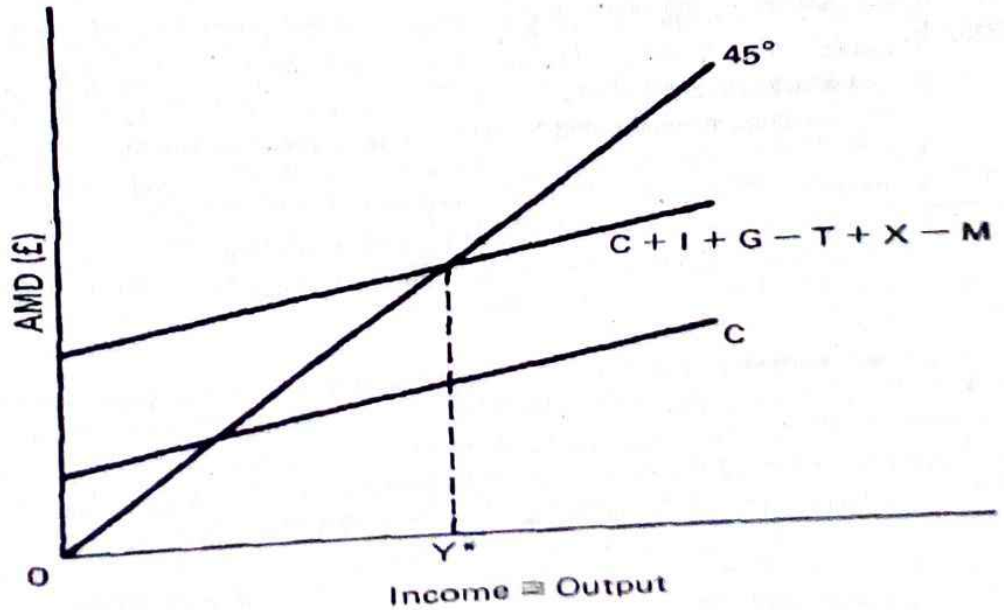
or alternatively:

$$S + T + M = I + G + X$$

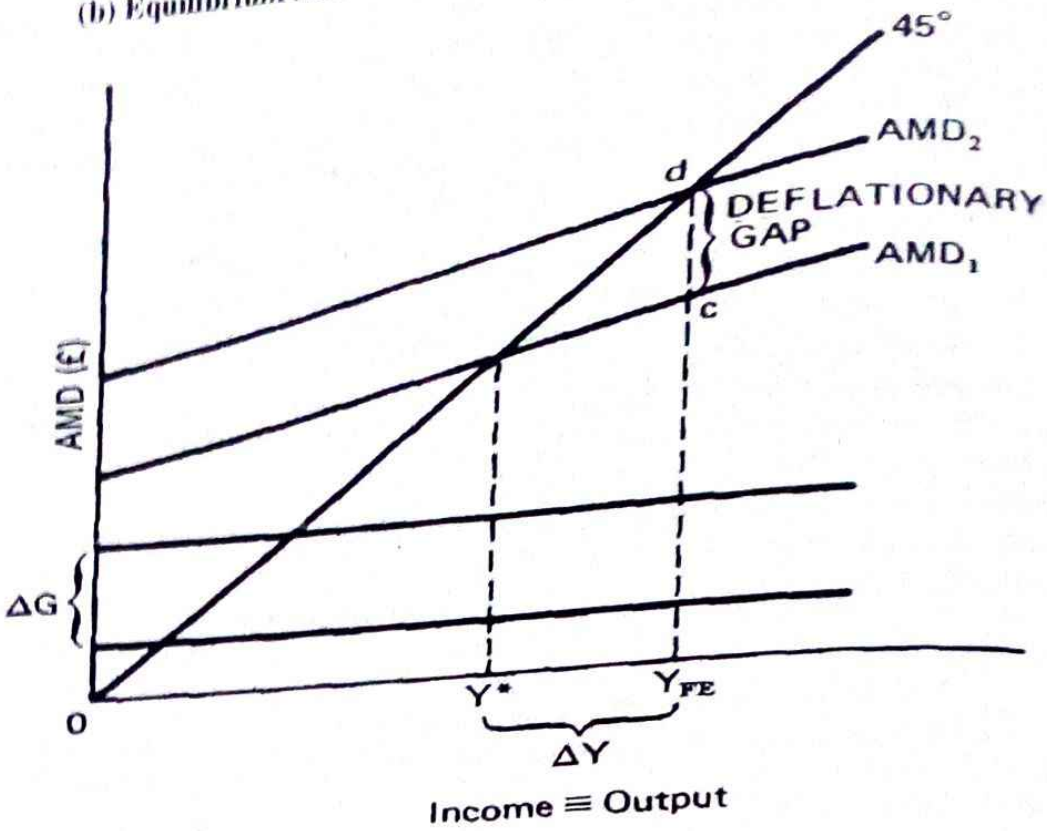
(leakages) (injections)

As in the two-sector model of the economy, the equilibrium level of national income is depicted in Figure 6.12a and b at Y*, where the AMD function crosses the 45° line.

Figure 6.12 (a) Equilibrium National Income in a four-sector economy



(b) Equilibrium National Income and Full Employment Equilibrium



6. Equilibrium National Income and Full Employment Equilibrium

Suppose that the equilibrium level of income Y* is insufficient to employ fully the available labour force in the economy. We can represent the size of national income or output which will employ all the labour force at Y_{FE} in Figure 6.12b. The existing level of aggregate demand represented by AMD_1 brings about an equilibrium level of national income at Y* rather than at Y_{FE}. In Keynesian terms, unemployment is caused by **deficient demand** in the economy. If any of the components of aggregate demand such as C, I, G or X autonomously increase, the **deflationary gap** between AMD_1 and AMD_2 might be closed, bringing about an equilibrium level of income at the full employment level.

Keynes, writing in the depression economy of the inter-war years, believed that the deficient demand was either caused in the first place, or certainly reinforced, by a collapse of private sector consumption and investment demand. (The tendency of households to save too much is called the 'paradox of thrift'. According to the Keynesian view, saving, which is an individual virtue, becomes a vice in the economy as a whole if unemployment is caused by too little consumption.

If Keynes was correct, it would be unwise to rely on an autonomous recovery in

consumption and investment to close the deflationary gap and bring about full employment. Instead the government could deliberately use the policy instruments at its disposal, government spending (G) and taxation (T), to inject demand into the economy through a budget deficit. Essentially, the government borrows the excess savings of the private sector, which are injected back into the circular flow of income in public spending. This is the theoretical basis of **Keynesian demand management** or **discretionary fiscal policy,** used by the Keynesians to control the level of aggregate demand in the economy to a level consistent with achieving equilibrium national income at full employment.

Question practice

Question: Distinguish the equilibrium level of National Income from the full employment level of National Income. Why may they differ?

Understanding the Question To answer the question you must firstly show an understanding of the meaning of the equilibrium level of national income. You can use any of the methods of writing the equilibrium condition, but it is probably best in this particular question to use

$$Y = C + 1 + G - T$$

It is not necessary to introduce exports and imports, though the introduction of the government sector allows you to show how government policy can bring about equilibrium at the full employment level, assuming that the initial equilibrium was not at the full employment level. You should draw a 'Keynesian cross' diagram similar to those in the section, to illustrate the deflationary or inflationary gap which will exist if equilibrium is below or above the full employment level.

To earn a high grade you must answer the second part of the question at some length, suggesting reasons why there can be too little or too much demand in the economy. In particular, you can explain how Keynes's theories of the consumption function and marginal efficiency of capital suggest that households may save too much and firms invest too little in a depressed economy, which settles into an underemployed equilibrium.

Not all economists agree that the equilibrium and the full employment levels of national income differ. We have noted in the introduction to this section how the pre-Keynesians believed that the economy is automatically self-adjusting to a full employment equilibrium. After the publication of Keynes's General Theory in 1936, the debate continued. Properly to understand the debate between 'Keynes and the Classics', our analysis would have to be extended to the interrelationships between the goods and labour markets and the money market. For example, Keynes's opponents argued that in conditions of excess supply of labour prices would fall along with money wages. There would be a reduction in the transactions demand for money, causing the equilibrium rate

of interest in turn to fall. If businessmen's investment decisions are responsive to the rate of interest, aggregate demand in the economy may now increase to close the deflationary gap. Thus market forces cure unemployment, and according to this view of 'how the economy works' Keynes's unemployment equilibrium is a special case in which wages and prices are inflexible downwards.

Answer plan

1. I Explain the meaning of the equilibrium level of National Income, clearly stating the equilibrium conditions, and showing how the level of income or output will change towards the equilibrium if the condition is not met.

2. Draw a 'Keynesian cross' diagram to show equilibrium national income above or below the full employment level of income. Draw an aggregate demand function consistent with equilibrium at the full employment level, and indicate the inflationary or deflationary gap.

3. Explain the possible causes of excess or deficient demand in the economy.

4. Possibly discuss the fact that not all economists believe that the two concepts are different.

The Multiplier

Points of perspective

When aggregate money demand (AMD) is greater (or less) than the income or output produced in the previous period, national income will rise (or fall) until an equilibrium is reached when AMD equals the available output. We now introduce the multiplier theory and investigate in more detail the process by which income or output changes when an autonomous change occurs in any of the components of aggregate demand.

The concept of the multiplier was first developed in 1931 by R. F. Kahn, who at the time was a colleague and former pupil of Keynes at Cambridge. The early theory was essentially an **employment multiplier**, which modeled how a change in public investment, for example in road-building, might cause a subsequent multiple expansion of employment. Keynes first made use of Kahn's employment multiplier in 1933 when he discussed the effects of an increase in government spending of £500, a sum assumed to be just sufficient to employ one man for one year in the construction of public works. Keynes wrote:

> 'If the new expenditure is additional and not merely in substitution for other expenditure, the increase of employment does not stop there. The additional wages and other incomes paid out are spent on additional purchases, which in turn

lead to further employment... the newly employed who supply the increased purchases of those employed on the new capital works will, in their turn, spend more, thus adding to the employment of others; and so on.'

By the time of the publication in 1936 of Keynes's famous General Theory, the multiplier had become a vital part of Keynes's explanation of how an economy can settle into an **underemployment equilibrium**. In the General Theory, Keynes focused attention on the **investment multiplier**, explaining how a collapse in investment and business confidence can cause a multiple contraction of output. From this, it was only a short step to suggest how the government spending multiplier might be used to reverse the process. Analytically, in terms of the Keynesian expenditure/income model of the goods market in the economy, an increase in public spending which is unaccompanied by an increase in taxation has an identical expansionary effect to an autonomous increase in investment. Indeed, nowadays the concept of the **National Income multiplier** is used as a generic term to include the multiplier effects which result from a change in **any** of the components of demand. Thus the **autonomous consumption multiplier,** the **investment multiplier,** the **government spending multiplier,** and various forms of **tax** and **foreign trade multipliers** are all examples of specific National Income multipliers.

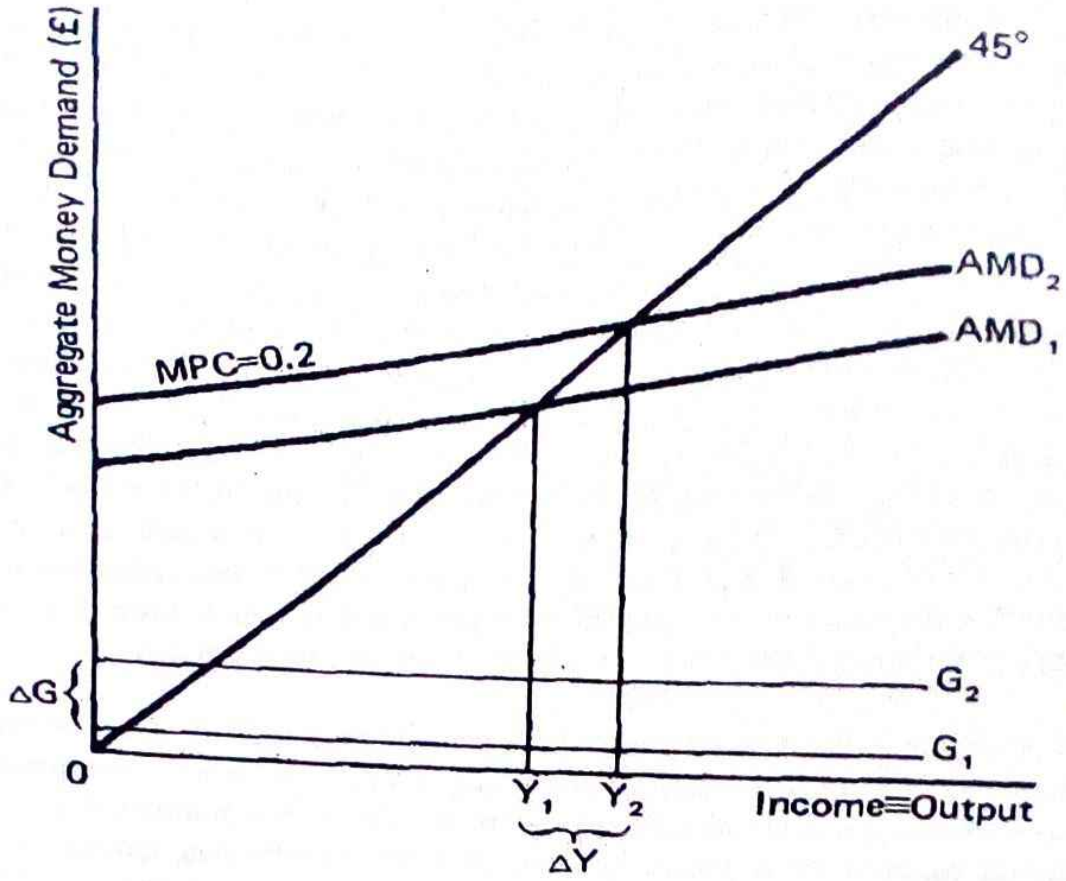
At a local level, the regional multiplier is sometimes identified. A regional multiplier indicates by how much regional income or output will increase when additional demand is injected into the regional economy. However, the **money multiplier** should not be classified amongst the Keynesian or National Income multipliers, though its existence serves to illustrate that multiplier effects occur whenever a change in one variable cause **multiple and successive stages** of change in another variable. Indeed, if fiscal policy and monetary policy are interdependent, an increase in government spending can result in simultaneous fiscal and monetary multiplier effects.

Underlying concepts

1 The dynamic multiplier

It is often forgotten that the multiplier process is essentially a dynamic process which takes place over a considerable period of time. In order to illustrate this, we shall continue to adopt for the time being the assumptions that the values of all the components of aggregate demand, with the exception of consumption, are determined autonomously. Only the consumption decisions of households are related to level of income through the marginal propensity to consume (MPC). We shall assume that the MPC is 0.8 at all levels of income, which of course means that the marginal propensity to save (MPS) must be 0.2. Saving is the only income-related leakage of demand in the economy. Whenever income increases by ¢10000, consumption spending increases by ¢8000, and ¢2000 is saved. Finally, we shall assume that prices remain constant in the economy and that a margin of spare capacity and unemployed labour exists which the government wishes to reduce.

(b) MPC = 0.2



Essential Information

1. The Simple Multiplier

Equation (i) is a behavioural equation showing the consumption function, and equations (ii) to (vi) depict the other components of aggregate demand, which are autonomous:

(i) $C = a + cY$, where c is the MPC.
(ii) $I = \bar{I}$: investment
(iii) $G = \bar{G}$: government spending
(iv) $T = \bar{T}$: taxation
(v) $X = \bar{X}$: exports
(vi) $M = \bar{M}$: imports

The equilibrium condition for the model is:

(vii) $Y = C + I + G - T + X - M$ or (viii) $Y = a + cY + \bar{I} + \bar{G} - \bar{T} + \bar{X} - \bar{M}$

Since saving is the only income-induced leakage of demand, the simple multiplier in this model is $\frac{1}{1-c}$ or $\frac{1}{s}$, where s is the marginal propensity to save. If for example private investment changes by ΔI, or government spending changes by ΔG, then the resulting change in the level of income, ΔY, is represented by

(ix) $\Delta Y = \frac{1}{1-c}(\Delta I)$ in the case of the change in investment;

and by (x) $\Delta Y = \frac{1}{1-c}(\Delta G)$ when government spending changes. The formulas of the investment and government spending multipliers are identical.

2 The tax multiplier

If we assume that households make consumption decisions out of post-tax disposable income rather than out of pre-tax income, a different formula emerges for the tax multiplier. We can now write the equilibrium condition as:

(xi) $Y = a + c(Y - \bar{T}) + \bar{I} + \bar{G} + \bar{X} - \bar{M}$ or (xii) $Y = a + cY - c\bar{T} + \bar{I} + \bar{G} + \bar{X} - \bar{M}$

Following an autonomous change in taxation equal to AT, the change in income, AY, is represented by:

(xiii) $\Delta Y = \frac{1}{1-c}\Delta(-cT)$ or (xiv) $\Delta Y = \frac{-c}{1-c}(\Delta T)$

where $\frac{-c}{1-c}$ is the tax multiplier.

This expression tells us two important things about the tax multiplier.

In the first place, it is negative, which means than an autonomous increase in taxation results in a fall in the equilibrium level of income, the size of the fall being a multiple of the absolute change in taxation.

Secondly, since the value of c (the MPC) is less than unity, the value of the tax multiplier in this model is always less than the value of the government spending multiplier $^{1}/_{1-c}$ For example, if the MPC is 0.8 and the government spending multiplier $^{1}/_{1-c}$ will be 5, and the tax multiplier $^{-c}/_{1-c}$ will be 4.

As an exercise, you might calculate the size of the two multipliers for other values of the

MPC. Whatever the chosen value of the MPC, you will find that the absolute size of the government spending multiplier (forgetting the plus and minus signs) is always equal to the tax multiplier plus one! Thus a given increase in tax revenue has a smaller multiplier effect than a similar change in government spending. The explanation for this lies in the fact that disposable income falls by an amount equal to the size of the tax increase, but since part of disposable income is saved, spending does not fall by the full amount of the increase in taxation. In the initial stage of the multiplier effect, the change in spending is $-c\Delta T$ rather than $-\Delta T$. Summing all the successive stages of the multiplier process, the total change in spending and income equals $\frac{-c}{1-c}(\Delta T)$ rather than $\frac{-1}{1-c}(\Delta T)$.

3 The Balanced Budget multiplier

Now let us suppose that the government decides to increase public spending and taxation by equal amounts, so that $\Delta G = \Delta T$. The combined multiplier effects of ΔG and ΔT are shown by:

$$\text{(xv)}\quad \Delta Y = \frac{1}{1-c}(\Delta G) + \frac{-c}{1-c}(\Delta T)$$

Since $\Delta G = \Delta T$, we can rewrite this as:

$$\text{(xvi)}\quad \Delta Y = \left(\frac{1}{1-c} + \frac{-c}{1-c}\right)\Delta G$$

$$\text{or (xvii)}\quad \Delta Y = \left(\frac{1-c}{1-c}\right)\Delta G$$

The expression $\frac{1-c}{1-c}$ is the **balanced budget multiplier**, which must be 1. This means that an increase in public spending financed by an equal increase in taxation has an expansionary effect on the level of income exactly equal to the size of the injection of public spending. (If you find the algebra difficult, you can note from the previous section that when, for example, the MPC is 0.8, the government spending multiplier is 5, and the tax multiplier is - 4. The balanced budget multiplier is simply the addition of the two multipliers; in this case 5 + (- 4) = 1!).

4 Taxation and import leakages

Up to this point in the analysis we have treated taxation and import demand in a highly artificial way. We have assumed that they are unrelated to the level of income, being determined instead exogenously outside our model. This is unrealistic, since a part at least of both taxation and import demand are likely to be dependent on the level of income. For the sake of simplicity, we shall now assume that all of taxation and import demand are income-induced, being determined endogenously within our model in the

following ways:

(xviii) $T = tY$, where t is the marginal rate of taxation
and (xix) $M = mY$, where m is the marginal propensity to import.

We can write the equilibrium condition for the new version of our model as:

(xx) $Y = a + cY + \bar{I} + \bar{G} - tY + \bar{X} - mY$

In this particular model the multiplier is:

$$k = \frac{1}{1 - c + t + m}$$

$$\text{or } k = \frac{1}{s + t + m}$$

The three income-induced leakages of demand in the model all affect the value of the multiplier. The greater the propensity to import, and the higher the rate of taxation, the smaller will be the multiplier effect resulting from a change in any of the autonomous components of demand. There is no such thing as a *unique* formulation of the multiplier, relevant to all the possible models we could specify. In general terms, however, the government spending or investment multiplier will be:

$$k = \frac{1}{\text{marginal change in income-induced leakages}}$$

5 The multiplier and economic policy

(i) Keynesian demand management

In earlier units we briefly explained how Keynesians have advocated the use of discretionary fiscal policy to control or influence the level of aggregate demand in the economy. The greater the size of the government spending multiplier, the smaller the increase in public spending which is needed to bring about a desired increase in money national income. Similarly, the larger the tax multiplier, the smaller the tax cut which would be necessary. If the multipliers are large, and if most of the increase in money national income is in real output rather than in the price level, fiscal policy will be an effective way of controlling the economy.

But, as we have explained, the marginal propensity to import and high marginal tax rates reduce the size of the multiplier. Consider for instance the British economy which is relatively small compared with the USA, and open to trade. As the British propensity to import continues to increase so noticeably in recent years it becomes very doubtful whether their government spending multiplier is much higher than 1, and indeed, as we shall shortly explain, it may even be less than 1.

(ii) Monetarism and 'crowding out'

We have also indicated that the multiplier effect resulting from an increase in government spending will be greatest when taxation remains unchanged. According to this logic a government should deliberately increase the size of the budget deficit if it wishes to maximize the expansionary effects of an increase in public spending. However, our analysis has ignored the monetary effects of the widening budget deficit. It is precisely upon these monetary effects of fiscal policy that monetarists concentrate attention, arguing:

(a) That increased borrowing to finance the budget deficit causes interest rates to rise. Higher interest rates reduce private investment, thereby countering the expansionary effects of the increase in public spending. The net size of the multiplier may even be zero if the increase in public spending 'crowds out' and displaces an equal amount of private spending. Indeed 'extreme' monetarists have gone further, arguing that fiscal multipliers can be negative in the long run if 'productive' private investment is crowded out by 'unproductive' public spending.

(b) In so far as a multiplier results from an increase in public spending financed by a budget deficit, the main effect may be on prices rather than on real income or output. Monetarists argue that expansionary fiscal policy will increase the rate of inflation if the budget deficit and PSBR are financed by methods which increase the money supply. Keynesians agree that fiscal stimulation can lead to inflation rather than an expansion of real output if the economy is at or near full capacity and full employment. The area of dispute between Keynesians and monetarists is whether the government spending multiplier will expand real output or prices when there is a considerable margin of spare capacity in the economy.

(iii) Fiscal policy multipliers

We have already noted that the taxation multiplier is likely to be smaller than the government spending multiplier. However, there may also be variations in the nature of the multiplier depending on whether an increase in public spending is channeled into public works or transfer incomes and on whether changes in taxation involve direct or indirect taxation. In times of mass unemployment and gravely deficient demand, public works may be an effective fiscal policy instrument since:

(a) they can be directed to regions of especially high local unemployment;

(b) by providing lasting **social capital**, they can improve a region's economic infrastructure and create an environment attractive to private investment;

(c) the government is seen to be 'doing something about unemployment' - public works are likely to employ large numbers of manual workers;

(d) public works are not 'import intensive'; a large fraction of the initial injection of income is spent on the outputs of domestic industry, thereby increasing the size of the multiplier.

However, public works are not a very suitable policy instrument for the discretionary management of demand at or near the full employment level. Public works are slow to start, difficult to stop, and altogether difficult to 'fine-tune'. **Discretionary tax changes** may be more appropriate for controlling demand, except perhaps in conditions of very high unemployment. The multiplier effect of a tax change occurs through its impact on private sector consumption and investment. However, the size of the effect will be reduced if the propensity to import is high.

As an alternative to both public works and tax cuts, a government can expand demand by increasing public spending in the form of transfer incomes paid to lower income groups, or even by redistributing the existing level of public spending through greater transfers. The transfer income multiplier tends to be larger than other fiscal multipliers because the poor have higher propensities to consume and lower propensities to import than the better-off. Nevertheless, it is not usually practicable to raise and lower the level of welfare benefits and unemployment pay as a part of discretionary demand management. Instead, transfer incomes such as supplementary benefit, which form a state 'safety net' for the poor, act as an automatic stabilizer dampening or reducing the multiplier effects which result when 'outside shocks' hit the economy. As incomes fall, the increase in the total volume of transfer incomes paid to the unemployed and the poor reduces the total contraction in income and demand. Similarly, the 'means tested' nature of many transfer incomes and the progressive nature of income tax create an automatic stabilizer which reduces the multiple expansion that follows an injection of demand into the economy. As the economy approaches full employment, fewer people qualify for transfer incomes and the proportion of income paid in taxation increases. The volume of public spending falls while that of taxation rises.

Question practice

Question 1: Explain carefully what is meant by the multiplier. Show how the multiplier concept can be extended from a closed economy with no government sector to an open economy with a government sector.

Understanding the Question

We have described in the unit how the nature of the multiplier is largely dependent on the number of income-induced leakages of demand from the economy. If saving is the only leakage, the investment multiplier is $^{1}/_{s}$, but if marginal rates of taxation and a marginal propensity to import are introduced into the model of the economy, the multiplier becomes

$$\frac{1}{s+t+m}.$$

Alternatively, the multiplier is

$$\frac{1}{s+ct+m}$$

if consumption decisions are made out of post-tax disposable income rather than out of pre-tax income.

More generally, the multiplier is $\frac{1}{\text{marginal change in income-induced leakages}}$

Since total leakages are likely to be greater income-induced leakages in an open economy with a government sector than in a closed economy with no government sector, the multiplier is likely to be smaller than in the simple model of a two-sector economy.

Answer plan

1. Define the national income multiplier as the convergent expansion or contraction of income or output which occurs as the economy adjusts to a change in any of the autonomous components of demand or expenditure.
2. Show how the size of the multiplier in a closed economy with no government sector depends on the size of the MPC (or MPS).
3. Explain how more generally the size of the multiplier is determined by all the income-induced leakages of demand. The introduction of income-induced taxation and import demand reduces the size of the multiplier.

Multiple Choice Questions

Questions 2 and 3

Questions 2 and 3 refer to the following data.

Income (Y)	Consumption (C)	Saving (S)
0	150	−150
100	220	−120
200	290	− 90
300	360	− 60
400	430	− 30
500	500	0
600	570	30
700	640	60
800	710	90
900	780	120
1000	850	150

Question 2: Which of the following formulas represents the consumption schedule in the table above?

(a) 150 + 0.3Y (b) 150 + 0.7Y (c) 150 + 0.8Y (d) -150 + 0.3Y

Question 3: In this example, the investment multiplier is:

(a) 0.7 (b) 3.33 (c) 1.43 (d) 0.3

Understanding the Questions (i.e. questions 2 and 3 above)

Question 2 puts into numerical form the Keynesian consumption function $C = a + cY$. Autonomous consumption, which is unrelated to the level of income, is measured by a, whereas income-induced consumption is represented by cY. The marginal propensity to consume is c. According to the consumption schedule in the question, autonomous consumption is 150. (Thus alternative (d) must be wrong.) The schedule also indicates that the proportion of the additional income at each stage which is spent on consumption is 0.7. Thus the correct expression for the consumption function is 150 + 0.7Y (alternative (b)). The value of the MPC (0.7) can then be used to calculate the size of the investment multiplier.

By applying the multiplier formula $k = \frac{1}{1-c}$, we get: $\frac{1}{1-0.7}$ or $\frac{1}{0.3}$, which equals 3.33: alternative (b) in Question 3.

Data Response Questions

Question 4: In an economy the following values occur:

Consumption	= 0.8Y Disposable
Net Investment	= 260
Government spending	= 400
Exports	= 300
Imports	= 0.2Y
Income Tax	= 0.5Y (there are no indirect taxes)
	Y = National Income.

(a) At what level of National Income will equilibrium occur?
(b) Because of unemployment the government wishes to increase total spending by 600. By how much must it increase its own spending to achieve this?
(c) What will this do
  (i) to the budgetary position;
  (ii) to the Balance of Payments?
(d) Explain, with aid of a diagram, the meaning of the term deflationary gap.

Understanding the Question

(a) The equilibrium condition for this particular model is:

$$Y = 0.8(Y-0.5Y) + 260 + 400 + 300 - 0.2Y$$

where the marginal propensity to consume out of disposable income is 0.8, the marginal rate of income tax is 0.5, and the marginal propensity to import is 0.2. Solving the equation gives the equilibrium level of national income at 1200.

(b) We can calculate the change in government spending which will increase total income, output and expenditure by exactly 600 if we know the size of the multiplier. We have not explained in the main body of the unit precisely how the multiplier

formula is derived from the equilibrium condition for national income, except to say that

$$k = \frac{1}{\text{marginal change in income-induced leakages}}$$

We shall now take the opportunity provided by this question to show in detail how the multiplier formula is derived in any particular national income model.

Representing the marginal propensity to consume out of disposable income as c, the marginal rate of income tax as t, and the marginal propensity to import as m, we can rewrite the equilibrium condition in general form as:

(i) $Y = c(Y - tY) + I + G + X - mY$

or (ii) $Y = cY - ctY + I + G + X - mY$

If we collect all the Y terms on the left-hand side of the equation, we get:

(iii) $Y - cY + ctY + mY = I + G + X$

or (iv) $Y(1 - c + ct + m) = I + G + X$

Dividing both sides of the equation by the expression in brackets, we get:

(v) $Y = \frac{1}{1 - c + ct + m}(I + G + X)$

The expression $\frac{1}{1 - c + ct + m}$ is the multiplier in this particular model.

Since c is the marginal propensity to consume, the multiplier can also be expressed as: $\frac{1}{s + ct + m}$, where s is the marginal propensity to save. This is the multiplier formula for an economy in which decisions to consume and save are made out of post-tax disposable income. If, in contrast, consumption and savings decisions were made out of pre-tax income, the multiplier would be $\frac{1}{s + t + m}$. (We introduced this multiplier earlier in the unit.) Since the MPC (c) is less than one, the value of ct must be less than the value of t. Hence the multiplier is larger when consumption decisions are made out of post-tax income because the leakages of demand are smaller.

Solving the expression $\frac{1}{s + ct + m}$, the value of the multiplier is 1.25. Therefore:

$$\Delta Y = \frac{1}{s + ct + m}(\Delta G)$$

or $600 = 1.25\ (\Delta G)$

or $\Delta G = \frac{600}{1.25}$

$\Delta G = 480$

Alternatively, you can obtain the correct answer by substituting the value of the new equilibrium level of national income (1800) into the equilibrium condition and solve the equation to find the level of government spending at the new equilibrium:

$$1800 = 0.8(1800 - 0.5(1800)) + 260 + G + 300 - 0.2(1800)$$
$$\text{or } G = 1800 - 0.8(1800 - 0.5(1800)) - 260 - 300 + 0.2(1800)$$

When G is calculated in this way, you must of course remember to subtract the original level of government spending (400) from the new level determined by the solution of this equation.

(c) Calculate the size of taxation and the level of imports at the original equilibrium level of income (1200) and work out whether the budget and the Balance of Payments are respectively in surplus or in deficit. Repeat the exercise at the new equilibrium level of Y(1800) and note the changes in both balances.

(d) Draw a 45° line diagram clearly labelling the deflationary gap and explaining its meaning.

MULTIPLE CHOICE QUESTIONS

1. National Product is at its equilibrium level when,
   (a) It is identical with National Income.
   (b) It is equal to aggregate demand.
   (c) It is at that level which requires full employment of resources.
   (d) Realised saving is equal to realised investment.

2. As used by economists the word 'Saving' means
(a) The same thing as investment, since S = I when the economy is in equilibrium.
(b) The amount of money people do not spend in the course of some given time period.
(c) That part of income not spent on consumption during some given time period.
(d) The total amounts of money which people have accumulated in the past.

3. Only one of the following counts as investment in the macro-economic sense. Which is it?
   (a) A company's purchase of land on which to build a new factory.
   (b) An individual's purchase of newly issued shares in a company.
   (c) A business firm's purchase of a new car for use by its salesmen.
   (d) An individual's purchase of government securities.

Questions 4, 5 and 6 are based on the following data which refers to a two-sector economy

National income	*Planned consumption*	*Planned investment*
1000	1100	200
1200	1200	200
1400	1300	200
1600	1400	200
1800	1500	200

4. What is the value of the MPS as income changes from 1400 to 1600?
   (a) 0.125 (b) 0.14 (c) 0.875 **(d) 0.5**

5. What is the equilibrium level of income?
   (a) 1200 (b) 1400 **(c) 1600** (d) 1800

6. If, at the equilibrium level of income, investment were to increase by 100, what would be the eventual increase in National Income?
   (a) 100 **(b) 200** (c) 300 (d) 400

7. A change in the rate of spending on exports causes a change in income as follows
   100 + 70 + 49 + 34.3 + + + + +
   The value of the multiplier is
   (a) 0.3 (b) 0.7 (c) 1.43 **(d) 3.33**

8. In a two-sector economy the saving and investment functions are as follows,
   S = - 10 + 0.2Y and **I = - 3 + 0.1Y** What will be the equilibrium level of income?
   (a) 70 (b) 80 (c) 90 (d) 100

ASSIGNMENT

1. In Country A personal disposable income is roughly four-fifths of GNP. The MPC out of personal disposable income is about three-quarters. Imports are usually about 30 per cent of GNP. What is the approximate value of the multiplier?

2. In Country X, consumption spending is always equal to one half of personal disposable income. The government is currently spending £150m. on goods and services; its revenue is derived from a tax of 20 per cent on factor incomes. Investment is £250m., Exports are £100m. and Imports are one-fifth of Gross National Product. There are no indirect taxes, undistributed profits or transfer payments. Calculate,
   (i) The equilibrium level of Gross National Product,
   (ii) The current level of consumption,
   (iii) The budget surplus or deficit,
   (iv) The balance of payments position.