

ECONOMICS

WITH

SEARCH

KEY concepts

Essay
LIBRARY

GCE 'A' LEVEL

NEW SOLUTIONS. NEW MINDS.

ABOUT THIS BOOK

GCE 'A' Level Economics Essay Library

An easy way to study Economics (or know what the Exam wants) is to go through some (if not all) of the critical questions of the subject; and along the way **SEARCH** for key concepts, theories or answering skills from the answers.

In this book, every topic has been further classified into smaller sub-topics in accordance with the syllabus. In this way candidates will always know where to **STAY FOCUS** and how to study smart for the Exam.

In short, a peaceful mind to work yourself out of a tough situation.

The Publisher

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1.1 Scarcity, Choice and Resource Allocation

Exam SYLLABUS

- ✎ meaning of scarcity and the inevitability of choices at all levels (individual, firm, government)
- ✎ opportunity cost
- ✎ basic questions of WHAT, HOW and FOR WHOM

Exam trend for 7-year period: 3 questions

TOPIC 1

THE CENTRAL PROBLEM OF ECONOMICS

- 1.1 Scarcity, Choice and Resource Allocation
 - 1.2 Production Possibility Curve
 - 1.3 Marginalist Principle
 - 1.4 Efficient Resource Allocation
 - 1.5 Different Allocative Mechanisms

1.1 Q.1

The study of economics centres upon the problem of scarcity.

Explain what is meant by this problem and assess whether the use of economics can solve the problem. [25]

COMMENT

A question on the very basic concept of 'scarcity'. It requires explanations on how economic theories and analysis work to 'solve' the problem. Note that the problem cannot be solved in the first place. Economics can assist Man in making better decisions among competing options.

SEARCH

KEY concepts

ESSAY

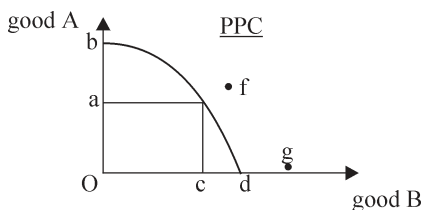
Economics is a study of a problem — a human problem; and that is scarcity. Scarcity means not having enough. In all economic theories we make the basic assumption that man is greedy — his wants for goods and services are unlimited. However, the resources in this world are limited. Resources refer to factors of production like land, labour, capital and entrepreneurship.

Problem is unlimited wants against limited resources

This too is an assumption and arguably a realistic one. With these two basic assumptions, we have a situation called scarcity because not all human wants can be satisfied. The use of resource for one purpose means the abandonment of another purpose. In economic theory this is called opportunity cost.

To obtain one thing; another is foregone

To illustrate the above, we have the simple model of the Production Possibility Curve (PPC). This curve shows combinations of 2 goods that a country can produce with given resources and technology held constant:



A model to illustrate opportunity cost; the PPC

Here the country can produce only amounts Ob or Od of Goods A and B respectively, or any point on the PPC. It can also produce at any point to the left of the PPC, which would mean the under-utilisation of resources. If Oa of good A is produced, then only Oc of good B can be produced; cd and ab being respective opportunity costs. Combinations f and g are unattainable because of insufficient resources — therefore a situation of scarcity. There is scarcity at the micro as well as the macro level. An individual's resources are limited. Using money as a medium of exchange, he can only purchase a limited quantity of items. More of one item means less of another item. A firm can produce only some items among a long list of items.

Some examples of opportunity cost

Choosing to produce good A and B would mean not producing goods X and Y. Likewise a government denies a country a new hospital if it decides on a new military base instead.

At the macro level; there is scarcity in the areas of national income, economic growth, investments, employment and trade. Often governments can only work for one macroeconomic objective at a time. There are trade-offs because objectives conflict with each other.

Opportunity
cost at the
macro level

Economics cannot solve the problem of scarcity. So long as we assume that man's wants are unlimited and resources are limited, there will be scarcity. This is exactly what all economic theories are based on. The use of economics can only help us to best utilise these limited resources so as to maximise utility and welfare.

Basic
assumption –
wants are
unlimited

The subject of economic puts forth different models for resource allocation. We have the market price mechanism of the capitalist system and central planning of the command economy. The former advocates the free interaction of the forces of demand and supply to give price. Price directs the economy on what and how much to produce, how to produce and for whom to produce. The latter advocates a central authority to decide on all economic matters. Both systems have their respective pros and cons. Scarcity is reduced; not completely removed.

Different
economic
systems to
reduce scarcity

Cost benefit analysis, which uses the concept of externalities, attempts to make up for the limitations of the price mechanism. This tool acknowledges that not all cost and benefits can be accounted for in monetary terms. They are called positive and negative externalities. By accounting for them we may achieve a more efficient allocation of resources. This in turn reduces the amount of scarcity in the world.

CBA applied
to scarcity
problem

The economic theories of law of diminishing marginal utility and indifference-curve analysis show how a rational consumer can maximise his utility within a given budget.

The economic analysis of cost and production, in the short run and long run, as well as the Laws of Diminishing Returns and Return to Scale shows how a lower cost per unit can be attained. Another micro economic tool is the theory of marginal revenue productivity. This analysis shows how factors are paid and how firms maximise profits from them.

Many theories
to tackle the
problem

The above theories and analysis, at best helps economists to study economic problems more systematically and effectively. It cannot solve the unsolvable problem of scarcity. Very often economics merely describes the problem and raises our awareness of them.

The main
purpose
of economic
study

The same can be said of theories like classical Keynesian theories on income generation, employment, trade, interest rate and economic growth. These merely assist us in accessing the situation better. Both have their respective merits and demerits. These also depend on government short-term and long term objectives. In the very long term however, the study of economics cannot solve the problem of scarcity.

Scarcity cannot
be solved

1.1 Q.2

- (a) What is meant by the basic economic problem of scarcity? [12]
- (b) Discuss whether economic growth solves the problem of scarcity. [13]

COMMENT

Part (a) is a highly theoretical question. Students should present the basic assumptions that economic theories are based on. The conclusion to any discussion in Part (b) depends on the assumptions made.

SEARCH

KEY concepts

ESSAY

- (a) Scarcity means 'not enough'. The outcome of scarcity is not to be satisfied to the level we want to be. Scarcity arises only because of the assumptions we make:

Firstly, we assume that Man's wants are unlimited. Man is greedy. If he has 10 houses he would still want the eleventh house. If he has 20 cars, he would still want another. If he has flown around the world 50 times, he would still want to fly again.

Basic assumption
on man's wants

Secondly, we assume that the resources of the world are limited. These are the factors of production of land, labour, capital and entrepreneurship. All countries have a finite amount of these. Consider our country. Singapore – we have only so much land; so many workers, only so many buildings and only so many entrepreneurs.

Basic assumption
on resources

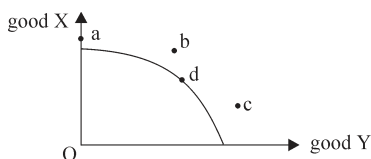
Based on the above, it is clear that we cannot produce all that we want. Singapore cannot produce a million bungalow houses, a million shopping centres and a million acres of rice fields! It will have to give up some goods to obtain more of another. This is scarcity.

Singapore
makes a good
example of scarcity

To illustrate scarcity: a man has only a certain amount of money to spend. If he buys more of chocolates, he knows he has to buy less of sweets. A firm's resources are limited. If it decides to produce product A, it will not be able to produce product B. The government, too, has limited funds: if it uses them to build a hospital, it will have to forego a polytechnic.

Scarcity at
the micro
level

Scarcity can be illustrated again by using the Production Possibility Curve. (PPC) The PPC shows combinations of 2 goods a country can produce using up all its limited resources:



PPC model
to illustrate
scarcity

Combinations a, b and c of the 2 goods are not attainable; showing scarcity. Point d on the PPC is attainable; but to have more of any one of the good would mean giving up the other good. This shows scarcity.

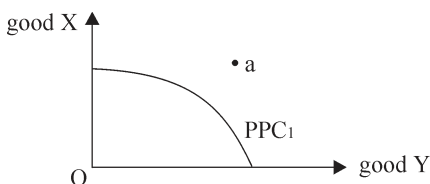
The basic economic problem is scarcity. Because of scarcity, we have to choose carefully on the use of our limited resources. We have to aim at allocative efficiency and productive efficiency. The former means to produce goods which are wanted as against producing goods which are not really wanted. The latter means to produce goods with minimum wastage of the resources allocated; that is the lowest average cost possible. The study of economics helps to analyse scarcity so that we can attain these efficiencies.

Economic study analyses scarcity for better decisions

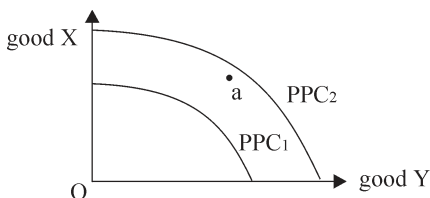
- (b) Economic growth refers to the increase in real output of a country. It is usually presented as a percentage increase in real GDP or real GNP. Short term growth is to increase output within capacity and long term growth is to expand capacity itself.

Meaning of growth

Can economic growth solve the problem of scarcity? Consider the following situation:



The country's demand for goods is at point a. But current resources allow production only up to any point on PPC_1 . Long term economic growth shifts the PPC to a new level to PPC_2 :



Growth reduces scarcity

Thus production level a, which was not attainable before, is now attainable. We can argue that the problem of scarcity has been solved.

Long term economic growth is largely due to science and technology: the creation of more advanced capital. It can only be due to a larger labour force and a more productive one. However, it is the former; science and technology, that is the main determinant of economic growth. So far, it has not been exhausted. In fact, there appears to be no end to scientific discoveries. Thus a piece of land, a worker or an entrepreneur is able to produce more and more over the years. If the PPC can keep on shifting to the right; then scarcity can be solved. This would be true at least in the immediate time period.

Some factors that determine growth

In the longer term human wants keep on growing; therefore creating scarcity again. Science and technology; results in better capital, that helps us meet the higher demand. Human wants rise again and the process repeats itself. If PPC growth is faster than the growth of human wants; then scarcity would have been solved.

In some areas of production, this has been the case. In developed countries, more food has been produced than people can eat. The market is flooded with simple manufactured goods. The evidence for this is the falling prices. In fact, in some developed countries, food is burnt away and brand new products are destroyed so as to keep prices up. A new chapter in economics has emerged: the economics of over production. It has been predicted by some futurologist that due to the rapid advancement in science in the present century, only 20% of the population need to work to provide for the rest. What is the 80% of the people going to do?

When production grows faster than demand; scarcity is solved

We conclude that, due to economic growth, scarcity has been resolved, at least in the developed countries. We have more shoes than we can wear; more food than we can eat and more services than we have time to enjoy. Fashion was created so that People throw what they have and buy the latest in fashion. But still factories are producing goods faster than we can consume them. Therefore, the new basic economic problem is going to be 'abundance' and not scarcity.

A radical opinion; new problem is over-production

1.1 Q.3

- (a) Explain how scarcity, choice and cost are related to the problems of consumers and producers. [12]
- (b) Assess whether these concepts are of relevance for governments when making macroeconomic policy. [13]

COMMENT

For part (a), the PPC model should be used. In part (b), the macroeconomic issues of economic growth, unemployment, inflation and so forth must be applied.

SEARCH

KEY concepts

ESSAY

- (a) Scarcity is defined as a situation in which resources are not enough to satisfy everybody's wants. The outcome is satisfaction not to the level we want it to be. Scarcity is the most fundamental concept in Economics. Scarcity is based on a few assumptions.

Meaning of scarcity

First, is that man's wants are unlimited. Man is never satisfied with his current level of consumption, and he always wants more. Second is that the world's resources are limited. These resources are the factors of production of land, labour, capital and entrepreneurship. All countries have a finite amount of these.

Limited resources against unlimited wants

Based on these assumptions, it is clear that it is not possible to produce all that we want. Some goods will have to be sacrificed to obtain more of other goods. This means that a choice has to be made.

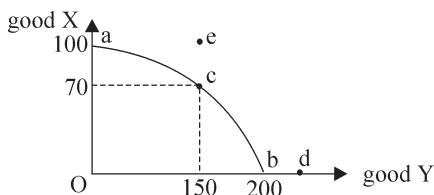
Why choice arises

To illustrate this concept; a man has a certain amount of money to spend. He decides to spend it all on sweets and chocolates. He can spend half his money on sweets, and the other half on chocolates. If he wants more sweets, he will have to give up some chocolates, and vice versa. In the same way, for a firm, its resources are limited. If it decides to produce more of product A, it has to give up some production of product B. Thus scarcity applies to both the consumers and producers.

The
effect of
scarcity

The Production Possibility Curve (PPC) further illustrates scarcity. The PPC shows all the possible combinations of 2 goods which a firm can produce, given a fixed amount of resources.

The PPC
model
illustrates
scarcity



At combination a, the producer can produce 100 units of X and 0 units of Y while at combination b, he can produce 200 units of Y with 0 units of X. He may also choose to produce at c, 70 units of X and 150 units of Y. All these combinations are possible combinations of goods that can be produced. To produce more of one good, the other has to be sacrificed. Combinations d and e are not attainable, which also shows scarcity. It is the same at country level.

Scarcity forces us to choose. Since we cannot have everything, we have to decide which one we will have to forgo. Since something has to be forgone, there is a cost involved. In a world of scarcity, there is a cost or sacrifice involved in satisfying a particular want. This cost is called the opportunity cost, and is defined as the highest valued alternative that had to be forgone to satisfy the particular want.

Definition of
opportunity
cost

The basic economic problem is scarcity. Because of scarcity, we have to choose carefully on the use of our limited resources. The consumer faces the problem of satisfying his unlimited wants. He wants to have infinite satisfaction, from his finite purchasing power. Scarcity makes this impossible. As such, he will have to make a choice, based on relative opportunity costs, on which goods and services he will spend. He will have to decide which goods he has to forgo and which he wants to consume.

Choices;
outcome
of scarcity

For a producer, he will want to make infinite profit, using his finite resources. Likewise, scarcity makes this impossible, and he will have to make a choice, based on relative opportunity costs, on which good he wants to produce.

- (b) The basic macroeconomic concerns of the government are income distribution and economic stability. The relative weightage given to these concerns will determine what type of policies the government decides to employ.

Macro
objectives

Income distribution is important to create a 'fair' and 'just' state. This is a macroeconomic objective, and it requires government intervention through progressive taxation and social security benefits. Reducing large income gaps and poverty are important goals of development and are hallmarks for civilised society. Extreme inequality and widespread poverty can result in social unhappiness and unrest, which in turn result in political and social instability. The crime rate rises, illiteracy goes up, welfare costs rise, which all put a great strain on the economy.

Macro and
micro
economic
problems
to be solved

The concept of scarcity comes into play here. Scarcity means that the resources of a country are limited. As such, every available resource must be used to its fullest potential. The government needs to appreciate this when deciding the level of income equality it hopes to achieve.

If the poor are to be given a lot of financial aid, they may be spurred to further improve their skills, and contribute more to the economy. As the saying goes, a happy worker is a good worker. Likewise, if the poor is left behind as the country prospers, they may feel like outcasts and become disillusioned. As such, they may refuse to work and may even resort to undesirable means of obtaining money through illegal activities. Since the country's population is limited, such a situation is a great waste of scarce resources.

An approach
to solving
the problem

However, if too much aid is given to the poor, and too much money is taken from the rich, a whole new set of problems may arise. The poor may start to get pampered and over-dependant on government aid. This is the situation currently in many western developed countries. The poor live off their welfare payments, and contribute nothing in return to society. To support such high amounts of aid, the rich would have to be taxed a high amount, which may result in great unhappiness and discontent. This may result in the rich being less motivated to work, or even force them to migrate to other countries that tax less. This scenario too would be highly detrimental to the economy.

Objectives can
conflict with
each other

The concerns highlighted above means that the government will have to make a lot of tough choices. The government will have to decide on the best policy based on the opportunity costs of the available measures.

In a free market economy, the pricing system is prone to high unemployment, inflation, and balance of payment difficulties. Hence, the government seeks to stabilize the economy. In this, it has four aims.

The market
model

First is full employment. Unemployment wastes scarce resources, as stated above, and bring hardships to those without jobs. Full employment is not equal to zero unemployment. It is the employment level associated with some frictional unemployment.

Reducing
unemployment

Second is price stability. This provides a stable environment for investment and growth. Price stability is not zero inflation, but usually refers to 2-3% mild inflation necessary to stimulate growth.

Containing
inflation

Third is a healthy balance of payments. This is to ensure healthy reserves and stable exchange rate. Last is economic growth, which is the increase in real national income per capita, which should ensure higher living standards.

Raising
output levels

Ideally, the government would seek to achieve all these aims. However, this is not always possible. Sometimes, to achieve one aim, another aim has to be compromised. For example, there is large-scale unemployment due to a lack of demand. To counter this, the government will employ an expansionary fiscal policy to boost demand. Government spending on public projects will increase. However, this may drain away the reserves, and result in an unhealthy balance of payments.

Conflict in
objectives
occur

Thus, the concepts of choice and cost come into play again. The government will have to make choices based on the costs of the different measures available.

1.2 Production Possibility Curve

Exam SYLLABUS

 shape and shifts

Exam trend for 7-year period: 1 question

1.3 Marginalist Principle

Exam SYLLABUS

 decision making at the margin and maximising behaviour

Exam trend for 7-year period: 0 question

TOPIC 1

THE CENTRAL PROBLEM OF ECONOMICS

1.1 Scarcity, Choice and Resource Allocation

1.2 Production Possibility Curve

1.3 Marginalist Principle

1.4 Efficient Resource Allocation

1.5 Different Allocative Mechanisms

1.2 Q.1

- (a) An economy is faced by the exhaustion of an important natural resource at a time when it is introducing improved technology.

Explain how these events will affect the economy's production possibility curve. [8]

- (b) Discuss whether the operation of a market economy always produces a desirable outcome. [12]

COMMENT

Part (a) is a question in Basic Economic concepts and models, the PPC being one of them. For part (b) students must present both advantages and disadvantages of the pure market economy, where the government does not intervene in resource allocation.

SEARCH

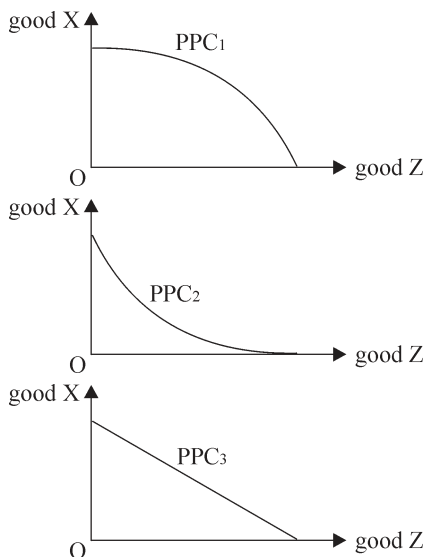
KEY concepts

ESSAY

- (a) The Production Possibility Curve (PPC) or frontier shows combinations of two goods a country can produce using up all factors of production; that is, at full employment.

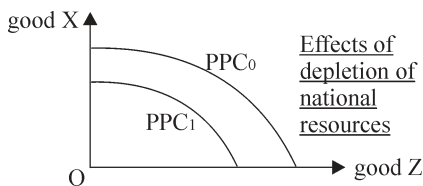
The PPC is drawn on the following assumptions: factors of production are fixed and limited. Technology is constant and labour productivity stays the same. In fact we simply assume *ceteris paribus* (all other factors remaining constant). Based on these, the PPC will look like any of the 3 below:

The PPC model illustrates basic economic concepts



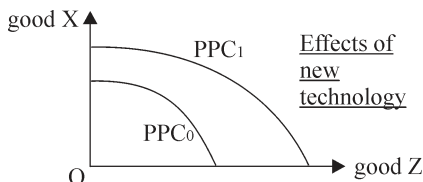
It slopes downward because of scarcity but PPC_1 shows increasing opportunity cost, PPC_2 shows falling opportunity cost and PPC_3 shows constant opportunity cost.

As given, when a country's resources (natural raw material) are being depleted, the PPC will shift inwards. With fewer resources, its maximum production is now less:

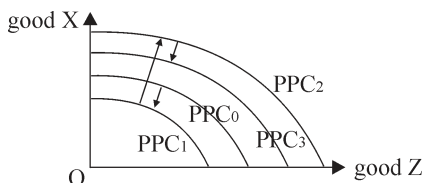


Here we assume other factors stay constant. However if new technology is being discovered — and introduced, the PPC will shift outward. New technology (and more of it) is capital; a man-made resource.

Technology is the main factor for long term growth



If this second factor offsets the earlier factor; then the PPC, overall, will shift outwards.



Most countries in the world experience this trend. Science and technology gives new capital. This always offsets the lost in natural resources. PPC_3 is the final PPC.

Thus the productive capacity of a country keeps on expanding.

- (b) In a free enterprise economy, the government or central authority does not decide what goods to produce, how they are to be produced and which individuals or group should have what goods and how much of each. Production and distribution are governed by the price or market mechanism. A market is defined as a network within which buyers and sellers of a particular good are in such close communication that the price of the good tends to be the same everywhere.

Basic workings of the market system

The price mechanism works through the interaction of market forces. They determine the prices of goods and services and the prices of factors of production (in this case, it is labour). The motive of production is profit. The decisions of consumers determine the demand for goods and services; the decision of producers determine the supply of commodities. The interaction of demand and supply determines the price of the good. Changes in demand and supply lead to changes in market prices, which in turn affect the ways in which resources are being allocated.

The price mechanism answers "what to produce" and "how much to produce"

Is it best to leave the allocation of goods and labour to the price mechanism? The answer lies in the following discussion.

An advantage of using the price mechanism is that the allocation and distribution of resources is efficiently performed without the need for an extensive central authority. Through a system of prices, people's preferences for different goods and services are being registered. Like a marvelous computer, these preferences are transmitted to those responsible for producing the goods, and moving the factors to produce them. All these occur without employing a host of officials.

The price mechanism is fast and efficient

Secondly the goods and services produced would be determined by price signals, which reflect consumer wants. Consumers are given the freedom to choose what they wish to have rather than goods and services imposed upon them, as would have occurred under the command system.

There is allocative efficiency

Thirdly, the price system leads to efficiency in the allocation of resources. Competition among firms forces them to choose the least-cost production techniques, thus avoiding wastages. Furthermore, maximum economic value is obtained from a given set of resources at any point of time. Not only is there no wastage of resources, all resources are also being put to their best or most profitable uses.

This is productive and allocative efficiency

There are disadvantages of using the price mechanism. Firstly a perfectly performing price system does not provide for the issue of an ethical income distribution. In such a system, the limited supplies of goods and services are rationed out to those who have the money to buy them. This may mean that the scarce resources are diverted to the production of luxuries for the rich before an adequate output of commodities for the poor is produced. This explains why in most countries, the government intervenes in one way or another to correct the inequalities that arise from the automatic operation of the price system. Under the price system, for instance, education may be an expensive commodity. If education is sold according to what consumers can pay, then the poor will hardly have a chance to be educated.

The market system leads to a widening income gap

Secondly, in the non-provision of vital services, like merit goods and services, essential services for example health and education which would benefit everybody may not be provided in adequate amounts under the price system because they are not profit-yielding. In most advanced countries, the state now provides for what is considered to be basic needs such as medical care, insurance against sicknesses, industrial accidents and education.

The market under produces merit goods

Then there are public goods. There are some goods, for example defence and street lightning, which can be consumed only on a public, or collective basis. Such goods, known as public goods, cannot be purchased in small amounts by households and individuals. Furthermore, another individual cannot be excluded from consuming these goods if he has not paid for them. The price system is, not capable of providing such goods because it can be effective only when prices rightly reflect the wants of consumers.

The market will not produce public goods

The price system does not consider all the costs and benefits associated with the production and consumption of commodities. Because they are profit-motivated, producers ignore the costs of benefits that they impose on society as a result of their activities. Similarly, for the consumers. Such costs of benefits are termed externalities. Externalities accrue to parties other than the immediate buyer and seller involved in the transaction.

The market
will not
account
for
externalities

The price mechanism does not always function smoothly and perfectly because of imperfect flow of information. Businessman or producers do not always know when consumers demand will change and may produce too much or too little.

There is
imperfect
knowledge in
the market

Also, many producers may not be aware of the cheapest method of production. There may also be inadequate information regarding job opportunities. Consequently, labour is not mobile between industries and occupations. Hence there may be shortage of some types of labour. In sum, imperfections in information (on prices) make it impossible for buyers and sellers to react correctly enough to changing conditions.

Market is in
a constant
state of
disequilibrium

In conclusion, the price mechanism may not be the best method in the allocation of goods and resources. The government's discretionary intervention is sometimes needed to correct any market failures.

1.4 Efficient Resource Allocation

Exam SYLLABUS

 concept of economic efficiency: productive and allocative efficiency

Exam trend for 7-year period: 1 question

TOPIC 1

THE CENTRAL PROBLEM OF ECONOMICS

- 1.1 Scarcity, Choice and Resource Allocation
 - 1.2 Production Possibility Curve
 - 1.3 Marginalist Principle
 - 1.4 Efficient Resource Allocation
 - 1.5 Different Allocative Mechanisms

1.4 Q.1

Economic theory stresses the importance of efficiency in the allocation of resources.

- (a) Explain how, in theory, price and output should be determined in an industry to achieve efficient resource allocation. [15]
- (b) Discuss the difficulties of putting this into practice. [10]

COMMENT

Part (a) requires a description on the workings of the price mechanism in the context of a market or mixed economy. Part (b) should cover the areas of imperfect market structures for specific industries and the existence of externalities.

SEARCH

KEY concepts

ESSAY

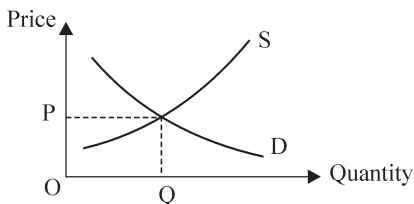
- (a) There are many economic models for a country to choose from for the allocation of its scarce resources. Amongst them are the market economy, the planned economy and the mixed economy. The trend in today's world, is towards the market economy. The basic features of this economy is private ownership of wealth, the profit motive, minimal government interference and the price mechanism.

The world is moving towards the market system

The price mechanism works as follows:

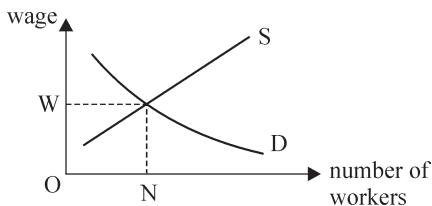
The interaction of the forces of demand and supply will give the equilibrium price and quantity. For each good there is a supply schedule and a demand schedule. If the two are brought together, we find that the quantity demanded and quantity supplied will be equal at one and only one market price. This is the equilibrium price, which is P, and the quantity demanded will be at equilibrium level Q. Refer to Figure 1.

The workings of the price mechanism



Therefore, the price P tells us what goods and services to produce (using the supply curve) and consume (using the demand curve), i.e. the level Q.

Similar analysis can be applied to the demand and supply for labour. The demand for labour will be downward sloping. This is because at a lower wage rate, employers will demand more units of labour since the cost of labour is cheaper and vice versa. The supply of labour will be upward sloping. This is because at a higher wage rate, workers will supply more units of labour since wages are higher and the reverse is true for lower wage rate. The price of labour is the wage rate given at W and the equilibrium quantity of labour demanded and supplied is at level N. Refer to Figure 2.



Price
mechanism
also
allocates
labour

Therefore, prices tell us what employment to seek (using the labour demand curve) and what to offer (using the labour supply curve), i.e. the level N .

In a free enterprise economy, the government or central authority does not decide what goods to produce, how they are to be produced and which individuals or groups should have what goods and how much of each. Production and distribution are governed by the price or market mechanism. A market is defined as a net-work within which buyers and sellers of a particular good are in such close communication that the price of that good tends to be the same everywhere.

Minimal
government
involvement

The price mechanism works through the interaction of prices, that is, the prices of goods and services, the prices of factors of production (in this case, it is labour level) and the profit motive of producers.

The decisions of consumers determine the demand for goods and services; the decisions of producers determine the supply of a commodity. The interaction of demand and supply determines the price of the good. Changes in demand and supply lead to changes in market prices, which in turn affect the ways in which resources are being allocated.

Demand, supply
and price
answers the
4 basic questions

Is it best to leave the allocation of goods and labour to the price mechanism? The answer lies in the following discussion.

The allocation and distribution of resources is efficiently performed without the need for an extensive central authority. Through a system of prices, people's preferences for different goods and services are being registered. Like a marvelous computer, these preferences are transmitted to those responsible for producing the goods, and moving the factors to produce them. All these occur without employing a host of officials.

Market is
cost-effective

The goods and services produced would be determined by price signals which reflect consumer wants. Consumers are given the freedom to choose what they wish to have: goods and services are not imposed upon them. This imposition would have occurred under the command system.

The price system leads to efficiency in the allocation of resources. Competition among firms forces them to choose the least-cost production techniques, thus avoiding wastage. Furthermore, maximum economic value is obtained from a given set of resources at any point of time. Not only is there no wastage of resources, all resources are also being put to their best or most profitable uses.

Competition
leads to
efficiency

- (b) The following are some of the difficulties of the market economy:

Firstly, a perfectly performing price system does not provide for the issue of an ethical income distribution. In such a system, the limited supplies of goods and services are rationed out to those who have the money to buy them. This may mean that the scarce resources are diverted to the production of luxuries for the rich before an adequate output of commodities for the poor is produced. This explains why in most countries, the government intervenes in one way or another to correct the inequalities that arise from the automatic operation of the price system. Under the price system, for instance, education may be an expensive commodity. If education is sold according to what consumers can pay, then the poor will hardly have a chance to be educated.

In the
market,
production
can be
biased

Essential services, for example health and education, which would benefit everybody, may not be provided in adequate amounts under the price system because they are not profit yielding. In most advanced countries, the state now provides for what is considered to be basic need such as medical care, insurance against sicknesses, industrial accidents and education.

Merit goods
are under-
produced

There are some goods, for example defence and street-lighting, which can be consumed only on a public, or collective basis. Such goods, known as public goods, cannot be purchased in small amounts by households and individuals. Furthermore, another individual cannot be excluded from consuming these goods if he has not paid for them. The price system is thus not capable of providing such goods because it can be effective only when prices rightly reflect the wants of consumers.

Public goods
are not
produced
at all

Secondly, a competitive environment leads to a wastage of resources. The lack of barriers to firms entering a profitable industry may lead to the presence of too many small firms producing the same commodity. It prevents the realization of the benefits of large scale production when production is being coordinated by one or two large firms. Most of these advantages lead to lower costs of production.

Over
production
can occur

Thirdly, for the price system to work efficiently, it is assumed that competition exists i.e. there are many buyers and sellers so that no one can influence price single-handedly. However, this notion of competition is liable to break down in practice. This happens when the efforts of businessmen to restrict competition becomes successful. When this occurs, consumer sovereignty is affected. The bargaining position of consumers is weakened considerably. The seller's position is, on the other hand, enhanced. He can restrict output so as to make higher profits. This causes misallocation of resources since prices are artificially fixed by the seller.

Imperfect
market
structures
arise

Fourthly, the price system does not consider all the costs and benefits associated with the production and consumption of commodities. Because producers are profit-motivated, they ignore the costs or benefits that they impose on society as a result of their activities. Similarly, for the consumers. Such costs or

Externalities
are ignored

benefits are termed externalities. Externalities accrue to parties other than the immediate buyer and seller involved in the transaction.

Fifthly, the price mechanism does not always function smoothly and perfectly because of imperfect flow of information. Businessmen or producers do not always know when consumer demands will change and may produce too much or too little. Many producers may not be aware of the cheapest method of production. There may also be inadequate information regarding job opportunities. Consequently, labour is not mobile between industries and occupations. Hence, there may be shortage of some types of labour. In sum, imperfections in information (on prices) make it impossible for buyers and sellers to react correctly enough to changing conditions.

Imperfect
knowledge
leads to
poor
decisions

In conclusion, the price mechanism may not be the best method in the allocation of resources. The government's discretionary intervention is sometimes needed to correct any market failure.

8.1 Aggregate Demand (AD) and Aggregate Supply (AS)

Exam SYLLABUS

-  Shape and determinants of AD
-  Shape and determinants of AS
-  Interaction of AD and AS
 - determination of level of output, prices and employment

Note: Derivation of the AS curve and AD curve is not required.

Exam trend for 7-year period: 2 questions

TOPIC 8

THEORY OF INCOME AND EMPLOYMENT DETERMINATION

8.1 Aggregate Demand (AD) and Aggregate Supply (AS)

8.2 Keynesian Theory

8.3 Unemployment

8.1 Q.1

Discuss how a significant fall in the level of interest rates might affect the components of aggregate demand. [25]

COMMENT

The components of AD are C, I, G, X-M. A fall in interest rates affects all of them; if not directly, then indirectly. All components should be covered.

SEARCH

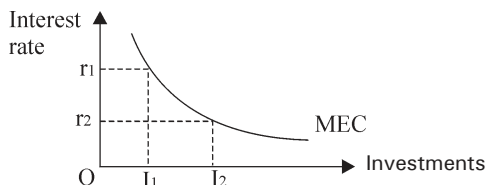
KEY concepts

ESSAY

AD is made up of $C + I + G + X - M$.

A large fall in interest rates will affect consumption (C), investment (I), government spending (G) and imports (M) directly; and exports (X) indirectly. Firstly, a fall in interest rate causes investments to rise.

Interest is the cost of using money. Firms usually borrow money to finance their respective investments. Even if they use their own money, the interest foregone is cost. So long as the returns on an investment is greater than the interest incurred, the investment is profitable. } Function of interest



Investment increases from I_1 to I_2 ; when interest rates falls from r_1 to r_2 .

An important determinant of investment is the expected net rate of return on additional capacity. This can be estimated by subtracting the estimated operating costs over the life of the asset from the expected revenue through additional sales. However, since cash today can be invested and so earn interest, it is worth more than cash in the future. Because of this, the future stream of net returns expected from the asset must be discounted from a present value(PV) equivalent, which can then be compared with the current cost of the asset. The most obvious discount rate to use for this purpose is the current rate of interest, since this represents the return foregone if cash is used to purchase fixed assets instead of being loaned. If the present value of this future stream of net returns is greater than the current cost of the asset (its supply price), then additional investment will be profitable. Put another way, net present value (NPV) = PV – supply price; if NPV is positive, then additional investment will be profitable. } Investment is good if MEC is greater than interest rate

$$PV = \frac{\$5000}{(1.1)} + \frac{\$5000}{(1.1)^2} + \frac{\$3500}{(1.1)^3} + \frac{\$2000}{(1.1)^4} + \frac{\$1000}{(1.1)^5} = \$13\,294$$

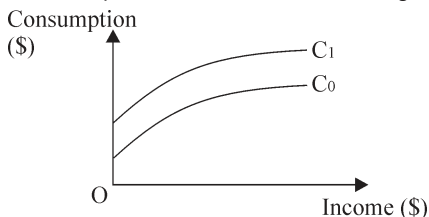
Thus, purchasing the machine is expected to yield a profit of approximately \$13 294 at current prices. Subtracting the current cost of the machine, i.e. \$10 000, still yields a positive net return of \$3 294. In other words, the Net Present Value (NPV) = PV – supply price = +\$3294. Since NPV is positive, additional investment will be profitable.

Based on the above example, if the interest rate now rises to 20%, then the PV will fall. This may make the investment unprofitable because PV is less than the cost of the capital machinery bought. However, if the interest rate falls to 5%; then PV will rise; making the purchase of more capital equipment profitable.

Note that the above discussion is on the basic assumption of all other factors remaining constant. In reality, many other factors also affect investments – political stability, government fiscal policy, cost of capital; new inventions and so forth. If these change as interest rates change, then the above relationship may not hold.

The concept of present value (PV)

Consumption (C) is spending by households on goods and services to get utility. Consumption is usually induced by income; having a direct relationship. However other factors can also influence C; causing a shift in the consumption function: interest being one of them.

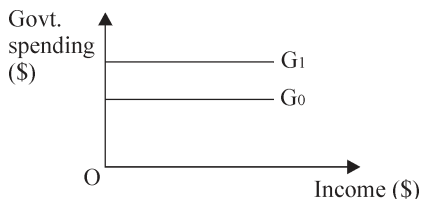


Lower interest causes consumption to rise

When interest falls; consumption increases autonomously from C_0 to C_1 . Those people with money find it better to spend because the reward for not spending (savings) is now lower. Indeed they even borrow to supplement their current income. Those without money, prefer to borrow to consume as the cost of borrowing is now low. Here we have to assume that all other factors remain constant. These are expectations, income tax, GST and inflation.

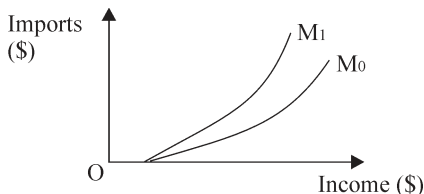
A fall in interest rate can cause government spending (G) to rise. Government usually finance their expenditures from traditional sources such as taxes and through the sale of public utilities. However, when governments plan for a budget deficit; they have to borrow. Governments borrow locally as well as from foreign sources. It borrows from private banks and by the sale of bonds. When market interest rates are low, bond interest are also low. This enables the government to borrow more.

Lower interest, theoretically, can cause government spending to rise



When interest rates falls, government spending will rise from G_0 to G_1 , for any level of income.

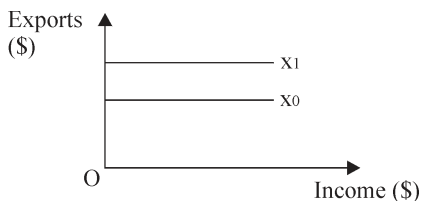
Imports (M) is expenditure by locals on foreign goods and services. Imports is part of consumption and therefore directly linked to income. The higher the income; the higher the consumption and therefore the higher the imports. Therefore imports are income induced.



Interest
affects
imports
through
C, I

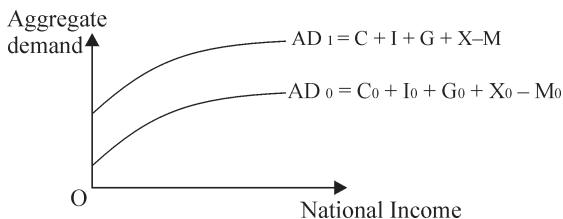
However a fall in interest rates will cause an autonomous increase in imports from M_0 to M_1 . This is because of the autonomous increase in consumption, discussed earlier. The increase in investments may also cause imports to rise as firms buy foreign machinery and resources. If the increase in M is at the expense of buying locally-produced products; then AD falls.

Finally the fall in interest rates may cause exports to increase by way of a depreciated currency. Assuming a flexible exchange rate system and free capital mobility, the lower interest rate will see an outflow of funds. This causes domestic currency to depreciate, which in turn makes exports cheaper to foreigners:



Interest
affects
exports
through the
exchange rate

Exports rise from x_0 to x_1 due to a fall in the currency, caused by the lower interest rate. In conclusion, a large fall in interest rate causes AD to rise.



This is on the assumption that the rise in C, I, G and X is able to offset the rise in M.

8.1 Q.2

- (a) Explain what determines the level of investment in an economy. [10]
- (b) In August 2000 the Dutch government was concerned that increases in aggregate demand were putting too much pressure on the economy.
- Discuss how effective fiscal policy alone might be in reducing this pressure. [15]

COMMENT

Part (a) – Define investment as used in economics; and describe factors that influence investments.

For Part (b); the word 'alone' is important. The entire essay is on the usefulness and drawbacks of fiscal policy.

SEARCH

KEY concepts

ESSAY

- (a) Investment in Economics means expenditure on resources to create capital. Capital is a man-made factor of production. The capital stock of a country comprises all infrastructure, buildings, machines and tools. In its broadest term; investment is income not for current consumption.

I shall answer this question in relation to the Singapore economy.

There are several factors that affect the level of investment in Singapore. The most important one is the political stability that has been maintained by the government for the past 40 years. According to BERI (an organization that surveys business environment risk), Singapore is one of the top countries that is almost risk-free and most conducive to foreign investment. Singapore, in fact has been placed as one of the top spots since the 80s and this trend is bound to continue in the 2000s. Being politically sound and economically viable, Singapore offers great security that is very essential for any economic activity to be successfully implemented.

Political
stability
attracts
investments

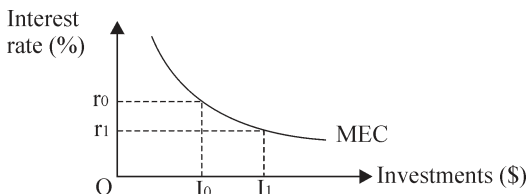
Besides political stability, the government policies also play a major role in influencing the level of investment in our economy. Our government has always been stressing on re-education and continue upgrading of the labour force and technology respectively. For examples, subsidies have been given by Skills Development Fund (SDF) to companies in training their workers and fulfilling the need for automation. Tax holidays for a certain number of years was given as an added incentive to investors. In addition, government expenditures are made to act only as complements (rather than competitors) to foreign investment for scarce resources.

Factors that
affect
investments

Interest rates on loans have also been kept at a reasonable range between 5% to 8% to be competitive in creating local investments. (This is low as compared to the early 80s when the economy was enjoying a boom, the rates were high at 8% to 12%). The higher the interest rate, the lower would be the level of investment (though we must qualify that the rate of interest is only one of the many factors that businessmen would consider). Since the Singapore economy is an open one, the domestic

Interest is the
cost of
borrowing money

rate of interest is closely linked to the world rate, therefore it does not pose as a major influencing factor to the capital investment coming from without.



Interest is the cost of using money. Firms usually borrow money to finance their respective investments. Even if they use their own money, the interest foregone is cost. So long as the returns on an investment is greater than the interest incurred, the investment is profitable.

The MEC
or rate
of return

An important determination of investment is the expected net rate of return on additional capacity. This can be estimated by subtracting the estimated operating costs over the life of the asset from the expected revenue through additional sales. However, since cash today can be invested and so earn interest, it is worth more than cash in the future. Because of this, the future stream of net returns expected from the asset must be discounted from a present value (PV) equivalent, which can then be compared with the current cost of the asset. The most obvious discount rate to use for this purpose is the current rate of interest, since this represents the return foregone if cash is used to purchase fixed assets instead of being loaned. If the present value of this future stream of net returns is greater than the current cost of the asset (its supply price), then additional investment will be profitable. Put another way, net present value (NPV) = PV – supply price; if NPV is positive, then additional investment will be profitable.

Calculation
of Present
value (PV)

For example:

$$\begin{aligned} PV &= \frac{\$5000}{(1.1)} + \frac{\$5000}{(1.1)^2} + \frac{\$3500}{(1.1)^3} + \frac{\$2000}{(1.1)^4} + \frac{\$1000}{(1.1)^5} \\ &= \$13\,294 \end{aligned}$$

Thus, purchasing the machine is expected to yield a profit of approximately \$13 294 at current prices. Subtracting the current cost of the machine i.e \$10 000 still yields a positive net return of \$3 294. In other words, the Net Present Value (NPV) = PV – supply price = + \$3 294. Since NPV is positive, additional investment will be profitable.

NPV
= PV – cost of
capital

Based on the above example, if the interest rate now rises to 20%; then the PV will fall. This may make the investment unprofitable because PV is less than the cost of the capital machinery bought. However, if the interest rate falls to 5%; then PV will rise; making the purchase of more capital equipment profitable.

Note that the above discussion is on the basic assumption of all other factors remaining constant. In reality, many other factors also affect investments – political stability, government fiscal policy, cost of capital; new inventions and so forth. If these change as interest rates change, then the above relationship may not hold.

In the long term Singapore is able to attract both local and foreign investments because of the government's economic philosophy. Firstly, a commitment to complete free trade. Investors can import and export any product. Secondly, the 'open-door' policy to foreign labour; both manual and professional. Thirdly, the assurance of perfect capital mobility. For these reasons Singapore has been a hub for investments.

Singapore adopts long-term strategies for investments

- (b) Fiscal policy (F.P) is the administration of government spending and government revenue, largely from tax. Its main policy instrument is the budget. A budget is a plan for future spending (G) and tax revenue (T). It can be an expansionary deficit where G exceeds T. It can be a contractionary surplus where G is less than T.

To reduce 'pressure' on the economy the government will have to adopt a contractionary fiscal budget. Government spending has to be cut and be less than government tax revenue, which will have to be raised.

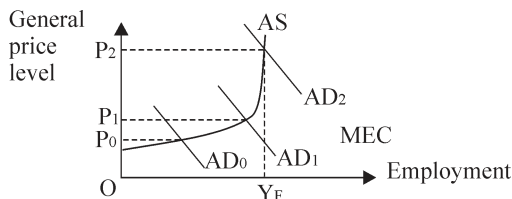
A budget surplus is a contractionary policy

Cutting government spending involves cancelling, postponing or reducing public works and projects. It will ease the pressure on the demand for resources. This in turn will prevent prices from rising for finished products.

Government spending is also reduced by cutting transfer payments. These include unemployment benefits, family allowances; grants to charities and even investment grants. It has the same effect as above.

Tax revenue is increased by cutting tax relief and rebates on direct taxes. Direct taxes are income tax, property tax and corporate tax. The government can also raise the rate on GST (Indirect tax).

The effect of the above cuts and raises is shown below.



Contractionary policies dampens AD

Had the policies not be adopted, AD_0 would have moved to AD_1 ; causing prices to rise from P_0 to P_1 . If the economy was at near full employment (Y_F); then AD would have moved to AD_2 ; causing prices to rise even further to P_2 .

Does FP work to reduce AD? Firstly, there are significant time lags. Government projects, already begun, cannot be cut off, the losses would be significant. New projects are part of the country's master-plan for economic growth and development. The cancellations may undermined the success of earlier projects and investments. Postponement usually means higher building costs in the future.

Cutting welfare and benefit payments are very unpopular. In a democracy there may be political costs when people vote against the government. People have got used to welfare support by government. The cuts may lead to social and political unrest. These may disrupt economic activities. At best government spending can only be reduced in stages. Even then it needs a strong government.

Cutting welfare benefits is difficult

Raising tax revenue is the most unpopular move any government can make. Households are used to their lifestyle and they have financial commitments, many have a tight financial budget. Should the government remove tax relief and rebates, there will be widespread protest. In fact, it may even worsen the inflation rate. The self-employed increase their fees and prices to offset the loss in disposable income. The employed resort to industrial action for wage increases. It will make the inflation rate worse. Again, it takes time for the tax increases to show its desirable effects.

The incidence of taxes can be shifted

FP alone will not be sufficient to reduce pressures on the economy. Any strategy must be a comprehensive one- involving monetary policy, exchange rate policy and direct regulations. There is no point if the budget is contractionary while monetary policy is expansionary, or the currency is too low. AD will still rise because of the latter. For the stated purpose, the money supply must also be reduced. Higher interest rates curtails consumption and investments. Likewise a stronger currency will channel expenditure abroad. Export demand, also, drops. Finally, if all else fails, direct regulations in the form of bans, price ceilings, quotas on purchases and rationing will have to be introduced. FP has to be complemented with all the above to ensure the success of the policy.

FP must be accompanied by monetary and exchange rate policies

8.2 Keynesian Theory

Exam SYLLABUS

Aggregate Expenditure function (AE)

- meaning, components of AE and their determinants
- income determination using AE-Income approach and W-J approach
- deflationary and inflationary gap; full employment level of income vs equilibrium level of income
- the multiplier
- the accelerator

Note: Candidates are not expected to give a numerical illustration of the accelerator.

Exam trend for 7-year period: 5 questions

TOPIC 8

THEORY OF INCOME AND EMPLOYMENT DETERMINATION

8.1 Aggregate Demand (AD) and Aggregate Supply (AS)

8.2 Keynesian Theory

8.3 Unemployment

8.2 Q.1

- (a) Explain what is meant by the equilibrium level of national income and describe the multiplier process when national income moves to a new equilibrium. [13]
- (b) How would the outcome of the multiplier process be affected by an increase in the propensity to save? [12]

COMMENT

(a) To describe the concepts of national income equilibrium and the multiplier, present the assumptions, basic arguments, tables and graphs.

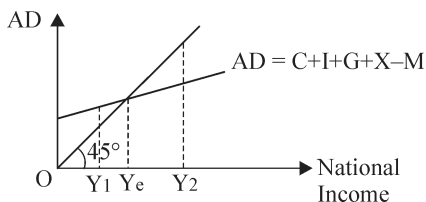
(b) This part is on a change in the mps and not a change in autonomous savings. It changes the gradient of the AD function and not a parallel shift of it.

SEARCH**KEY concepts**

Definition of national income equilibrium

ESSAY

- (a) National income is the value of goods and services produced in a country in a given year. The equilibrium level of income is said to be achieved when there is no more tendency for the national income to change. In the Keynesian model, national income equilibrium can be achieved at less than full-employment. In the short run, all the 4 sectors of an open economy will express an aggregate demand function as shown in the diagram below:



AD, the expenditure of households, businesses, government and foreign trade, rises at a decreasing rate as income rises. At Y_1 , the AD is more than the income level. Thus savings will be falling, prices rising and thus, the economy will expand output towards Y_e . At Y_2 , the income level is more than the required expenditure. Savings or stocks will grow and prices fall. The economy will cut back on output till income is at Y_e . Thus Y_e is the equilibrium level of income as it equals AD. The main cause for disequilibrium is that the market price mechanism is imperfect — is very haphazard. Decision-making is completely decentralized among millions of consumers and thousands of producers. Miscommunication between them results in over or under production of goods. The Keynesian assertion is that, given the level of aggregate demand, and adjustments in output will achieve equilibrium.

Cause of income disequilibrium

The multiplier principle asserts that when a country experiences an autonomous injection of demand into its circular flows of income, its national income will increase in multiples. The injection may come by way of investments, exports and government expenditure. Therefore a \$100 worth of exports, for an example, may cause the national income to increase by \$500.

To illustrate the process, let's assume the following: firstly it's a 4-sector economy. Secondly there are unemployed resources available. The marginal propensity to save is 0.2, the propensity to tax is 0.1 and the propensity to import is 0.2. Thus the multiplier will be 2 because for every \$1 injected, its multiplier strength will be weakened by the leakage. This is given by

$$k = \frac{1}{\text{mpm} + \text{mps} + \text{mpt}} = \frac{1}{0.5} = 2$$

The autonomous injection is a \$100 investment expenditure. Presently the economy is in equilibrium.

Thus, when one company spends that \$100, the economy will produce \$100 worth of output. The recipients of this expenditure, will in turn order goods and services from other companies, but not without paying away money for taxes, saving and importing goods. The resulting second round of expenditure is reduced by these leakages from the circular flow. The process repeats itself for every round of expenditure. It can be shown as:

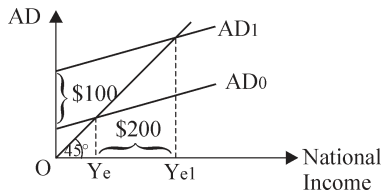
Round	ΔY	ΔC	ΔS	ΔM	ΔT
1	\$100	\$50	\$20	\$20	\$10
2	\$50	\$25	\$10	\$10	\$5
3	\$25	\$12.5	\$5	\$5	\$2.50
4	\$12.5	...	...	...	...
...	...	...	...	...	...

The multiplier process

The final effect will be:

$$\Delta Y = \Delta I \times k = \$100 \times \frac{1}{0.2 + 0.2 + 0.1} = \$200$$

In graphical terms it will look like:



Graphical illustration of multiplier process

National income increases by \$200 and the new equilibrium level is Y_{e1} .

- (b) For a 4-sector economy, the multiplier (k) is given by $k =$

$$\frac{1}{\text{mpm} + \text{mps} + \text{mpt}}. \text{ An increase in value of any one of the leakages}$$

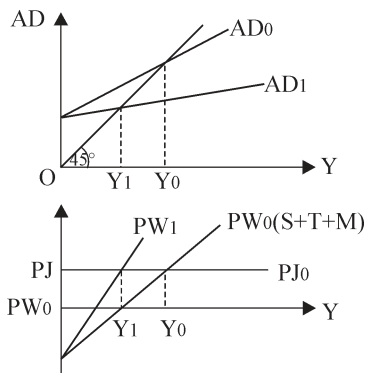
weakens the value of k . Therefore if the mps increases the value of k falls. For simplicity, we shall assume mpm and mpt both

equal zero. Therefore $k = \frac{1}{\text{mps}}$. If $\text{mps} = 0.1, 0.2, 0.3, 0.4$

or 0.5, then the value of k will be 10, 5, 3.33, 2.5 and 2 respectively.

A rise in mps weakens the value of k

Diagrammatically, the AD function and the planned withdrawal ($S + T + M$) functions shifts clockwise and anti-clockwise respectively:



The change in the mps could be due to several reasons: firstly a change in values and lifestyle. People have become thriftier. Secondly, a more unequal distribution of income. The rich, it has been argued tend to save more than the poor. As income is transferred to the former, the mps at national level rises. A third factor can be the stock of wealth in the country. A large stock of wealth is more reassuring. Income is generated from wealth. A higher stock of wealth leads to a lower mps and vice versa.

Assuming all other factors remaining constant, a rise in mps causes the value of k to fall. Therefore this weakens the multiplier process for any given level of injections. However the fall in k , due to the rise in mps, can be offset by a fall in the mpm or mpt or both. In a 4-sector economy, there are 3 sources of leakages: factors that weaken aggregate demand. Even if saving tendencies increase, aggregate demand level can be maintained if government lowers taxes and if the economy relies less on imports.

Changes in
mpt and mpm
can offset
the fall in mps

Finally, the multiplier process depends not on the value of k but on the stimuli as well: the injections or autonomous increases in aggregate demand. These are investments, government spending, exports and autonomous consumption. An increase in any one of these can maintain the level of national income equilibrium, even if the value of k has fallen. A weak k with a strong injection is more useful to a country than a strong multiplier and low injections.

8.2 Q.2

- (a) Explain what is meant by the equilibrium level of national income. [10]
- (b) Analyse the effect on the equilibrium level of national income of
- (i) an increase in the level of savings
 - and (ii) an increase in the level of exports. [15]

COMMENT

Part (a) must include definition assumptions, graph and equation. Part (b) is a question on the multiplier. Savings cause the multiplier to work backwards because it is an autonomous rise in savings, causing a shift of the AD downwards. Exports cause the multiplier to move forward.

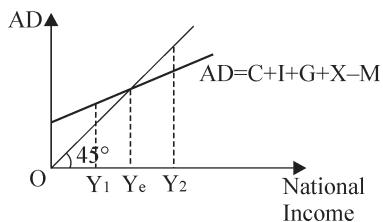
SEARCH

KEY concepts

ESSAY

- (a) National income is the value of goods and services produced in a country in a given year. The equilibrium level of income is said to be achieved when there is no more tendencies for the national income to change. In the Keynesian model, national income equilibrium can be achieved at less than full employment. In the short run, all the 4 sectors of an open economy will express an aggregate demand function as shown in the diagram below:

At equilibrium, national income does not change



AD, the expenditure of households, businesses, government and foreign trade, rises at a decreasing rate as income rises. At Y_1 , the AD is more than the income level. Thus savings will be falling, prices rising and thus, the economy will expand output towards Y_e . At Y_2 , the income level is more than the required expenditure. Savings or stocks will grow and prices fall. The economy will cut back on output till income is at Y_e . Thus Y_e is the equilibrium level of income as it equals AD.

Adjustment in income leads to equilibrium

The main cause of disequilibrium is the haphazard nature of the market place. The market place is completely decentralised in decision making. Everyday hundreds of firms make decisions on production. Firm A does not know what firm B is going to produce! This miscommunication amongst firms causes over supply or shortages. The latter will lead to an unplanned decrease in stocks. The former will cause an unplanned accumulation of stocks.

The main assumption of the Keynesian approach in explaining national income equilibrium is that aggregate demand (AD) is constant throughout the period of adjustment. Equilibrium is attained by trial and error, by simply varying the level of output. In the real world, this is not the case. AD, made up of consumption, investments, government spending and trade keeps on changing. Thus the economy would be in a permanent situation of change, rather than constant output.

Keynesian analysis assumes that AD is given

- (b) (i) An increase in savings will act as a leakage from the circular flow of income, and cause the national income to shrink by a multiple amount. Using the assumptions that the multiplier value is 2 and the increase in savings is \$20. Thus:

$$\Delta Y = \Delta L \times k = \$20 \times 2 = \$40$$

The national income falls by \$40. Here, we make the assumption that all other factors remain the same. They are the propensity to save, propensity to import, the propensity to tax, and all other expenditures.

Leakages make the multiplier work backwards

There is a multiple fall in income because the multiplier works in reverse. Note that the increase in the level of savings is an autonomous increase; not an induced one. It causes a parallel fall in the AD schedule:

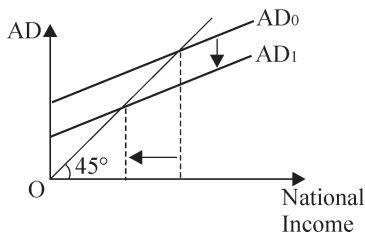


Diagram illustration of backward multiplier

When someone saves \$20, output falls by that amount. The producer of that output, therefore, has to reduce expenditure as well, causing output of others to fall. The process continues and for every round, the fall will be diminishing.

The multiplier process is based on the 2 basic arguments that demand creates supply (output) and that one man's spending becomes another man's income. Why would firms want to produce if there was no demand? Increased demand causes prices to rise. Being profit motivated, firms will produce more:

The multiplier process is shown in the table below:

Round	Fall in income	mps = 0.2 Δ in saving	mpt = 0.2 Δ in tax	mpm = 0.1 Δ in imports	Δ in consumption
1	\$20	\$4	\$4	\$2	\$10
2	\$10	\$2	\$2	\$1	\$5
3	\$5	\$1	\$1	\$1	\$5
4	\$2.5	⋮	⋮	⋮	⋮
5	⋮	⋮	⋮	⋮	⋮
All rounds	\$40	\$8	\$8	\$4	\$20

Table presentation of backward multiplier

- (ii) An increase in exports acts as an injection of money into the circular flow of income. If the multiplier value remains as 2 (as in part (i)), the increase in national income is 2 multiplied by the value of the export. If the export was \$50 then:

$$\Delta Y = \Delta I \times k = \$50 \times 2 = \$100$$

Here we have to assume that all other expenditures, leakages and propensities remain constant. We also have to assume that there are unemployed resources available. Thus the export injection and the subsequent increases in income narrows the deflationary gap. In part (i), the multiple fall in income enlarges this gap. If the economy was already at full-employment, then the injection of money due to exports will only lead to an inflationary gap. There will be a nominal increase in income and not a real one.

Exports make the multiplier move forward

The multiplier process in this case can be shown as:

Round	increases in income	mps = 0.2 Δ in saving	mpt = 0.2 Δ in tax	mpm = 0.1 Δ in imports	Δ in consumption
1	\$50	\$10	\$10	\$5	\$25
2	\$25	\$5	\$5	\$2.5	\$12.5
3	\$12.5	⋮	⋮	⋮	⋮
4	⋮	⋮	⋮	⋮	⋮
5	⋮	⋮	⋮	⋮	⋮

Table showing forward multiplier

In the first round, the export of \$50 causes the income to rise by \$50. This in turn causes savings to rise by \$10, taxes by \$10 and imports by \$5. Consumption, out of this increased income, rises by \$25. In the second round, output rises by \$25, and the process continues. The new equilibrium level of national income will be at a higher level by \$100 more.

8.2 Q.3

- (a) Explain the concept of the multiplier. [10]
- (b) Discuss why the value of the multiplier might differ between countries. [15]

COMMENT

Candidates should give a thorough account of how the multiplier process works – the definition, formula, table and graph. The 2-sector, 3-sector and 4-sector economy, with their respective leakages and injections should be presented, before coming to the second part. The multiplier in a closed economy is bigger because there are fewer leakages than in an open economy. However, this does not necessarily mean that income will grow faster in the former.

SEARCH

KEY concepts

ESSAY

- (a) The multiplier principle states that with an autonomous increase in expenditure in an economy, the national income will increase by a multiple amount. This can be presented as

$$k = \frac{\Delta Y}{\Delta J} \text{ or } \Delta Y = k \times \Delta J$$

where k is the multiplier; and J is injections (AE).

In an open economy, with government, injections of expenditure may come in the form of exports, investments and government expenditure. Take for example, the government decides to spend \$100 m to build a new power plant. This expenditure will be income for those companies commissioned to build the power plant. Their respective incomes will be turned into expenditure on other goods and services of other companies. Thus these second group of companies earn more income which in turn will be spent as expenditure. The process continues with an infinite increase in income in the economy. However, through the process, there will be leakages or withdrawals of money from the circular flow of income. There are savings, for a 2-sector economy; savings and government taxation for a 3-sector economy; and savings-taxation-imports for a 4-sector economy. These leakages weaken the multiplier process after each round of expenditure and income. Thus the amount of income generated becomes finite when the multiplier diminishes. The total amount of income generated will be:

$$\Delta Y = \frac{\Delta Y}{MPW} \text{ or } \Delta Y = \frac{\Delta J}{MPS + MPT + MPM}$$

Take the case of a 2-sector economy. We assume that the MPS is 0.20, and there is unemployment of resources in the country. With an autonomous injection of \$100 m worth of investments, the income generated will be:

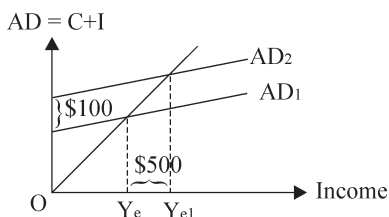
Main assumptions to illustrate the multiplier

ΔY	ΔC	ΔS	Round
\$100 m	\$80 m	\$20 m	1
\$80 m	\$64 m	\$16 m	2
\$64 m	\$51.2 m	\$12.8 m	3
\$51.2 m	\$40.96 m	\$10.24 m	4
\$40.96 m	\$32.76 m	\$8.19 m	5
$\vdots$	$\vdots$	$\vdots$	$\vdots$

Using the formula $\Delta Y = \frac{\Delta J}{MPS}$, we get $\Delta Y = \frac{100}{0.2}$.

Thus the new income generated is \$500 m.

The same process is shown in the graph below:



Graphical
presentation
of multiplier

The initial injection of \$100 m pushes the AD upward from AD_1 to AD_2 . The multiple increase in income is $Y_{eY_{el}}$ of \$500.

- (b) A closed economy with no government is a 2-sector economy. The only leakage and injection is savings and investments respectively. Thus the multiplier is stronger (5 in the question), because it has only one leakage to weaken it. Thus an injection (investments) of \$100 m in our above example, gives total income of \$500 m.

In a 4-sector economy, like the UK or Singapore there are 2 more leakages – imports and taxation. Thus the multiplier is weakened by a greater amount. If we assume the $MPM = 0.1$, and $MPT = 0.2$; then the income generated from a \$100 m of investments is

$$\begin{aligned}
 Y &= 100 \times \frac{1}{MPS + MPM + MPT} \\
 &= 100 \times \frac{1}{0.5} \\
 &= \$200m
 \end{aligned}$$

4-sector
economies
have more
leakages;
weakens the
value of
multiplier

Thus the UK's economic growth in income will be a lot more smaller than for the closed economy; given the same injection.

However, just as leakages are many, injections for the UK are many too. They are in the form of exports and government expenditure. Therefore it may be that 3 rounds of injections coming from exports (\$100 m); government (\$100 m), and investments (\$100 m); working on a multiplier of 1.3 can give more income than an injection of only 1 round of \$100 m on a multiplier of 5.

Most countries
are
4-sector
economies

In the real world, open economies are far richer than closed ones. In terms of economic growth, standard of living, investments and employment the former is better. Based on this, we can assume that injection in these countries are more than withdrawals, and thus they enjoy a greater increase in income.

Even among other 4-sector economies the value of multiplier can differ due to differences in the MPT, MPM and MPS.

The value of MPS differs due to differences in interest rate, trust in financial institutions; personal values of thriftiness, and government fiscal policy on savings and income levels. These factors affect the ratio of savings.

Many factors influence the MPS

The MPM may differ due to the extent of economic specialisation; the exchange rate, taste for imports and natural endowment. The ratio of imports to income can also be due to the level of protectionism a government adopts. A country who subscribes to complete free trade has a higher MPM.

The level of MPT depends on the number of taxes a country has; both direct and indirect. It also depends on the percentage tax rates and the progressiveness of these rates. A welfare country or a government heavily in debt will have more taxes, higher rates and progressive rates. These make the MPT higher and the multiplier weaker.

Many factors influence the MPT

8.2 Q.4

- (a) Assume there is an open economy with a government sector. Explain the conditions for equilibrium in the circular flow in such an economy.

[10]

- (b) Discuss how an increase in injections may affect the equilibrium level of national income.

[15]

COMMENT

Part (a) is a 2-sector economy. National income equilibrium occurs when planned income equals planned expenditure.

For part (b), students can choose any injection that triggers off the multiplier process.

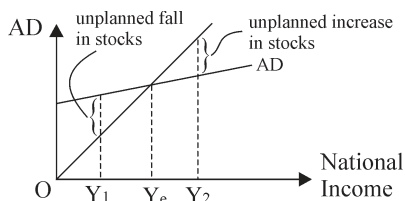
SEARCH

KEY concepts

ESSAY

- (a) National income is the value of goods and services produced in a country in a given year. The equilibrium level of income is said to be achieved when there are no more tendencies for the national income to change. In the Keynesian model, national income equilibrium can be achieved at less than full-employment. In the short run, all the 4 sectors of an open economy will express an aggregate demand function as shown in the diagram below:

Equilibrium means no changes in national income



AD, the expenditure of households, businesses, government and foreign trade, rises at a decreasing rate as income rises. At Y_1 , the AD is more than the income level. Thus savings will be falling, prices rising and thus, the economy will expand output towards Y_e . At Y_2 , the income level is more than the required expenditure. Savings or stocks will grow and prices fall. The economy will cut back on output till income is at Y_e . Thus Y_e is the equilibrium level of income as it equals AD.

Adjustments
in national
income
gives
equilibrium

The main cause of disequilibrium is the haphazard nature of the market place. The market place is completely decentralised in decision making. Everyday hundreds of firms make decisions on production. Firm A does not know what firm B is going to produce! This mis-communication amongst firm causes over supply or shortages. The latter will lead to an unplanned decrease in stocks. The former will cause an unplanned accumulation of stocks.

The main assumption of the Keynesian approach in explaining national income equilibrium is that aggregate demand (AD) is constant throughout the period of adjustments. Equilibrium is attained by trial and error, by simply varying the level of output. In the real world, this is not the case. AD, too, made up of consumption, investments, government spending and trade keeps on changing. Thus the economy would be in a permanent state of changes, rather than constant output.

AD is assumed
to be constant

- (b) Let the increase in injections be government expenditure (G). An increase in government spending will probably lead to a multiple increase in national income. This is called the multiplier process part of the Keynesian Theory of Income Determination and Employment. The multiplier process (k) asserts that an increase in autonomous demand or injection into a country's circular flow of income will lead to a more than proportionate increase in output and employment.

Definition of the
multiplier (k)
principle

The former can come in the form of investments, exports, government spending and even, autonomous consumption. The multiplier process can be expressed as:

$$k = \frac{\Delta Y}{\Delta AD}; Y \text{ is income and } AD \text{ is aggregate demand.}$$

The multiplier principle is based on the argument that demand creates its own supply. When there is demand, prices will rise. This will cause suppliers to increase production because they are profit motivated. Secondly, the principle is based on the argument that one man's expenditure will become another man's

2 basic
arguments
for the multiplier

income, which in turn will become expenditure and so on. The process continues until it diminishes because there are leakages after each round.

To illustrate the multiplier process we shall assume it is a 4-seater economy with consumers, producers, government and foreign trade. There are unemployed resources. All citizens have a marginal propensity to save of 0.2, marginal propensity to import is 0.2 and save of 0.2, marginal propensity to tax is 0.2. This means that out of every \$100 earned, \$50 will be leaked away. Next, we shall assume that the economy is in equilibrium.

Assumptions
to explain
the
multiplier

Let the increase in injections be government expenditure (G).

Finally the government undertakes a public project of \$200 m.

The impact of the above on the economy is given in the table below.

Round	ΔY	0.2 ΔS_m	0.2 ΔM_m	0.1 ΔT_m	ΔC_m
1	\$200	\$40	\$40	\$20	\$100
2	\$100	\$20	\$20	\$10	\$50
3	\$50	\$10	\$10	\$5	\$25
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
All rounds	\$400m	\$80m	\$80m	\$40m	\$200m

Table
presentation
of the
multiplier

When the government spends \$200m, the economy will start off work and produce goods and services worth \$200m. The factors of production that earns these 4200m will spend \$100m of it on other goods and services. The withdrawal in the first round of production were \$40m of savings. \$40m of imports and \$20m of tax. The process continues until the increased withdrawals equal the earlier injection of \$200m.

The process can be summarised by:

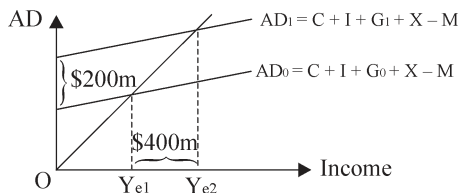
Diagrammatically, the k process is

$$k = \frac{\Delta Y}{\Delta J}; k = \frac{1}{mps + mpr + mpm} = \frac{1}{0.5} = 2$$

The multiplier
equation

$$\Delta Y = \Delta J \times k = \$200m \times 2 = \$400m$$

The national income will eventually increase by \$400m.

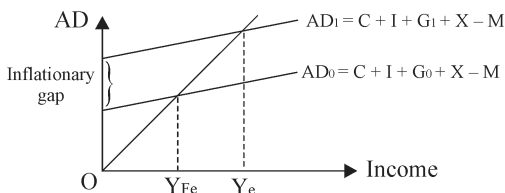


The aggregate demand shifted from AD_0 to AD_1 due to government spending (G_0 to G_1). The economy grew from Y_{e1} to Y_{e2} .

This is how an increase in government spending will lead to a higher level of national income.

However there may be circumstances when an increase in G may not cause a change in national income. For instance, the country is already at full employment.

The increase in G would instead, lead to an inflationary gap. Only nominal income rises with no increase in real output.



No multiplier effect if economy is at full employment

Secondly, the value of k can be very small; thus leading to a negligible increase in national output. The value of k is small because of a large mps . This would be the case in times of a recession.

The value k can be too small

Thirdly, if the country has supply side problems, the increase in G will probably cause inflation even with unemployed resources. Supply problems are: poor infrastructure; low labour mobility and productivity; natural disasters and political disturbances. The economy is not able to perform in the wake of rising demand. Inflation results.

The above are the possible consequences of increasing injections into an economy.

8.2 Q.5

- Use the multiplier process to explain the effect of an increase in investment by firms on output and prices in an economy. [13]
- Discuss the ways in which a government might influence private investment in order to try to ensure sufficient economic growth in a country. [12]

COMMENT

The multiplier theory should be presented in detail for part (a), this includes definition, assumptions, table, graph and equation. For part (b), there are different models for economic growth. It also depends on whether a country is developing or developed.

SEARCH

KEY concepts

ESSAY

- (a) An increase investment will probably lead to a multiple increase in national income. This is called the multiplier process as part of the Keynesian Theory of Income Determination and Employment. The multiplier process (K) asserts that an increase in autonomous demand or injection into a country's circular flow of income will lead to a more than proportionate increase in output and employment. The former can come in the form of investments, exports, government spending and, even, autonomous consumption. The multiplier process can be expressed as:

Investments
are
injections
to trigger
off the
multiplier
process

$$k = \frac{\Delta Y}{\Delta AD}; Y \text{ is income, and } AD \text{ is aggregate demand.}$$

The multiplier principle is based on the argument that demand creates its own supply. When there is demand, prices will rise. This will cause suppliers to increase production because they are profit motivated. Secondly, the principle is based on the argument that one man's expenditure will be another man's income; which in turn will become expenditure and so on. The process continues until it diminishes because there are leakages after each round.

2 basic
arguments
for the
multiplier

To illustrate the multiplier process we shall assume: it is a 4-sector economy with consumers, producers, government and foreign trade. There are unemployed resources. All citizens have a marginal propensity to save of 0.2, marginal propensity to import is 0.2 and marginal propensity to tax is 0.1. This means that out of every \$100 earned, \$50 will be leaked away. Next, we shall assume that the economy is in equilibrium.

Finally, a firm invest in a project of \$200m. The impact of the above on the economy is given in the table below:

Round	ΔY	0.2 ΔS_m	0.2 ΔM_m	0.1 ΔT_m	ΔC_m
1	\$200	\$40	\$40	\$20	\$100
2	\$100	\$20	\$20	\$10	\$50
3	\$50	\$10	\$10	\$5	\$25
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$
All rounds	\$400m	\$80m	\$80m	\$40m	\$200m

Table
presentation
of the
multiplier

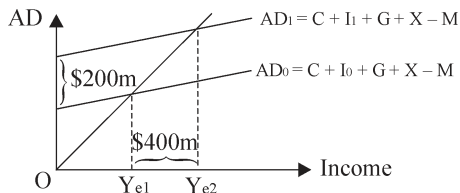
When the firm spends \$200m, the economy will start off work and produce goods and services worth \$200m. The factors of production that earn these \$200m will spend \$100m of it on other goods and services. The withdrawal in the first round of production were \$40m of savings, \$40m of imports and \$20m of tax. The process continues until the increased withdrawals equal the earlier injection of \$200m.

The process can be summarized by:

$$k = \frac{\Delta Y}{\Delta AD}; k = \frac{1}{mps + mmp + mpm} = \frac{1}{0.5}$$

$$\Delta Y = \Delta J \times k = \$200m \times 2 = \$400m$$

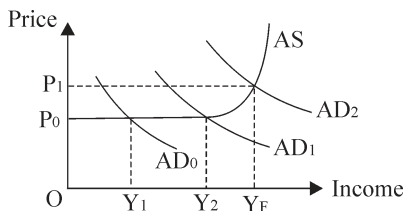
The national income will eventually increase by \$400m. Diagrammatically, the k process is:



Graphical presentation of multiplier

The aggregate demand shifted from AD_0 to AD_1 due to investment spending (I_0 to I_1). The economy grew from Y_{e1} to Y_{e2} .

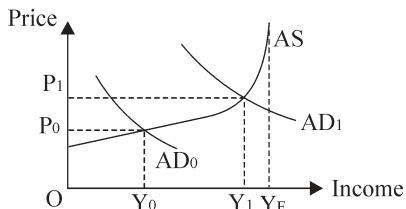
This is how an increase in investment spending will lead to a higher level of national income. The impact of an increase in investment on prices depends on the level of employment in the country. If the country is far below full employment, the there will be no inflation.



Inflation occurs if economy is at full employment

The output increases from Y_1 to Y_2 because AD_0 shifted to AD_1 . Price is stable at P_0 . However if the country were already at full employment (Y_F), the price will rise to P_1 , when AD_1 moves to AD_2 .

If the economy has considerable supply-side problems (bottle-necks) then prices will still rise when AD_0 rise to AD_1 , even when the economy is not yet at full employment.



Inflation can occur if economy is not supply-efficient

These are the possibilities on prices.

- (b) Private investments refer to expenditure by both local and foreign firms to produce capital. Capital refers to a man-made factor of production like buildings, factories, machines and equipment. In a broader economic definition, investment is all part of income not for current consumption.

To attract investments, government must implement supply side or pro-business policies. Take the case of Singapore as an example. The government ensures perfect capital mobility, in and out of the country. There are no restrictions on funds flowing in and out of Singapore. These have attracted many foreign MNCs to locate in the island. Secondly, the government adopts an open-door policy to foreign labour. All firms can purchase any imports. They are not obliged to buy local products to run businesses. Singapore has gone further in signing FTA agreements with the US and other countries. Thus, foreign and local MNCs will use Singapore as a base to export to other countries.

Ways to
attract
investments

Another way to attract investments is to build up the country's infrastructure. This includes the networks for land transport, air and sea transport, telecommunication and industrial estates. All businesses want minimal disruption and delays in production. Time is money. Therefore if a country can supply these facilities and amenities efficiently and at low prices, it would attract investments.

Infrastructure
plays an
important
part

Labour is another area the government can work on. Education and training must be on-going for all workers in the country. Government can provide completely free or subsidized education to workers so as to keep them employable and productive. Secondly, the labour laws in the country should not be restrictive. Laws should not over protect workers as this would increase costs for employers. Minimum wages should not be too high; contract work should be legal and labour entitlements should be kept at the bare minimum. Finally, government should supervise union-employer relationship. A system arbitration for resolving disputes should be in place so as to minimize strikes and other forms of industrial action. When a country has a good reputation for labour relations, it will attract investments. These are only some of the ways by which a country can attract and retain its investments, both local and foreign.

Productivity
of labour is
essential
to attract
investments