BA Economics

MACRO ECONOMICS II

Objective: To enable the students to understand the concepts of investment, multiplier, accelerator and General Equilibrium.

Module I: The Investment Function

Meaning of Capital and Investment – Types of Investment (Induced vs Autonomous), Determinants of Investment – Marginal Efficiency of Capital (MEC)- Relation between MEC and MEI – Factors other than the interest rate affecting inducement to invest.

Module II: The Concept of Multiplier

The Investment Multiplier – Working of the Multiplier – Assumptions to Multiplier- Leakages of Multiplier – Criticism of Multiplier – The Dynamic Multiplier- The Employment Multiplier.

Module III: Balanced Budget Multiplier and Foreign Trade Multiplier

Balanced Budget Multiplier – its Assumptions, its Criticism- Foreign Trade Multiplier- Criticism of the Foreign Trade Multiplier.

Module IV: The Principles of Acceleration and Super Multiplier

Acceleration – Meaning- The principles of Acceleration – Operation of the Acceleration principle – Assumptions-Criticism- The Super Multiplier or the Multiplier and Accelerator Interaction – Use of Multiplier and Acceleration interaction in Business Cycles.

Module V: General Equilibrium

General Equilibrium: Hicks - Hansen Analysis – Derivation of IS - LM Curves Keynes effect and Pigou effect – IS-LM Equilibrium –Objectives of Macro Economic Policy – Monetary and Fiscal Policy Measures.

What is a Capital Investment?

Definition: A capital investment is money allocated by a firm in assets that makes possible achieving the business' financial objectives. A capital investment usually refers to fixed assets required to accomplish the organization's mission.

What Does Capital Investment Mean?

All companies need assets to produce goods and services that generate profits. Those assets represent the business' capital investment and differ from materials, inputs and work force required to maintain day-to-day operations.

For example, a manufacturing firm initially has land, building and machinery as capital investment. Over the years, that firm is likely to make additional capital investments by purchasing other machinery to expand its production capacity. There are capital-intensive industries whose economic activities require larger amounts of capital expenditures to function.

In contrast, other business activities operate with lower capital investments. For example, a consulting firm has capital investments mainly in the form of office buildings and computer equipment. Also, a capital investment is assumed to enable one or more of the following purposes: to provide either initial or additional production capacity, to improve efficiency or to replace assets at the end of their useful lives.

Types of investment
1. Induced investment and
2. Autonomous investment

Induced Investment

Definition: The **Induced Investment** is a capital investment that is influenced by the shifts in the economy. These investments are made with the intention to **generate profit** out of such investments.

The change in the cost of raw material, change in the tastes and preferences of customers, increase in the lending or borrowing rates, etc., have a direct impact on the induced investments and to comply with these shifts, a company put efforts to keep the investments viable.

Such investment is governed by the income and the amount of profit a firm can generate. Thus, there is a direct relationship between the amount of investment and the income and profit earned by the firm. If the income and profit tend to increase, the induced investment also increases and vice-versa. This relationship is shown in the graph below:

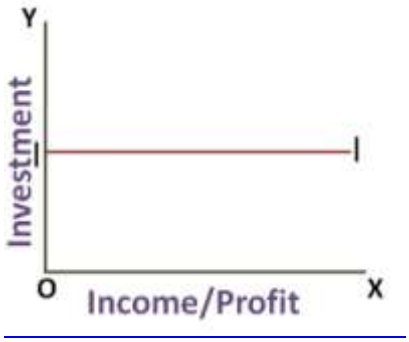
The figure shows that induced investment increases with the increase in profit/income and in the case of less income or losses the induced investment can even be negative. Hence, we can say, that when the investment increases due to an increase in profit and production, it is known as induced investment.

Such investments are generally made by the private companies when they see a gap between the demand and supply and make profits out of such venture. The induced investments can be abandoned anytime a firm wants if it feels that such investments are no more profitable for the firm.

Autonomous Investment

Definition: The **Autonomous Investment** is the capital investment which is independent of the economy shifts. This means, any change in the cost of raw material or any change in the salary and wages of labor etc. has no effect on the autonomous investment.

The autonomous investment is made for the welfare of the society and not for generating profits out of such investments. These investments are independent of the level of income or profit, and hence, any change in the income or profit levels will have no effect on the autonomous investment. This can be shown in the figure below:



The graph shows that autonomous investment remains independent of the level of income and profit and hence is parallel to the X axis. It does not mean that induced investment does not change at all; it can be increased or decreased at the individual's disposal. In such a case, the investment curve I-I either shifts upwards or downwards.

Generally, these investments are made by the government in the form of construction of roads, buildings, flyovers, etc. The autonomous investment is not continuous in nature which means, there could be a rise and fall in the amount of investments depending on the government's desire.

Also, the firms can make these investments with the purpose of introducing new technology, new inventions or increasing the demand potential in case of an economic recession and unemployment, etc.

Thus, we can say that profit/income induces no effect on the autonomous investment; it is the social welfare that brings a change in the investment levels. This can be seen, when a government make these investments at the time of recession, with the intention to boost the economy.

Determinants of Investment
Learning Objectives

1. Draw a hypothetical investment demand curve, and explain what it shows about the relationship between investment and the interest rate.
2. Discuss the factors that can cause an investment demand curve to shift.

We will see in this section that interest rates play a key role in the determination of the desired stock of capital and thus of investment. Because investment is a process through which capital is increased in one period for use in future periods, expectations play an important role in investment as well.

Capital is one factor of production, along with labor and natural resources. A decision to invest is a decision to use more capital in producing goods and services. Factors that affect firms' choices in the mix of capital, labor, and natural resources will affect investment as well.

We will also see in this section that public policy affects investment. Some investment is done by government agencies as they add to the public stock of capital. In addition, the tax and regulatory policies chosen by the public sector can affect the investment choices of private firms and individuals.

Interest Rates and Investment

We often hear reports that low interest rates have stimulated housing construction or that high rates have reduced it. Such reports imply a negative relationship between interest rates and investment in residential structures. This relationship applies to all forms of investment: higher interest rates tend to reduce the quantity of investment, while lower interest rates increase it.

To see the relationship between interest rates and investment, suppose you own a small factory and are considering the installation of a solar energy collection system to heat your building. You have determined that the cost of installing the system would be $10,000 and that the system would lower your energy bills by $1,000 per year. To simplify the example, we shall suppose that these savings will continue forever and that the system will never need repair or maintenance. Thus, we need to consider only the $10,000 purchase price and the $1,000 annual savings.

If the system is installed, it will be an addition to the capital stock and will therefore be counted as investment. Should you purchase the system?

Suppose that your business already has the $10,000 on hand. You are considering whether to use the money for the solar energy system or for the purchase of a bond. Your decision to purchase the system or the bond will depend on the interest rate you could earn on the bond.

Putting $10,000 into the solar energy system generates an effective income of $1,000 per year—the saving the system will produce. That is a return of 10% per year. Suppose the bond yields a 12% annual interest. It thus generates interest income of $1,200 per year, enough to pay the $1,000 in heating bills and have $200 left over. At an interest rate of 12%, the bond is the better purchase. If, however, the interest rate on bonds were 8%, then the solar energy system would yield a higher income than the bond. At interest rates below 10%, you will invest in the solar energy system. At interest rates above 10%, you will buy a bond instead. At an interest rate of precisely 10%, it is a toss-up.

If you do not have the $10,000 on hand and would need to borrow the money to purchase the solar energy system, the interest rate still governs your decision. At interest rates below 10%, it makes sense to borrow the money and invest in the system. At interest rates above 10%, it does not.

In effect, the interest rate represents the opportunity cost of putting funds into the solar energy system rather than into a bond. The cost of putting the $10,000 into the system is the interest you would forgo by not purchasing the bond.

At any one time, millions of investment choices hinge on the interest rate. Each decision to invest will make sense at some interest rates but not at others. The higher the interest rate, the fewer potential investments will be justified; the lower the interest rate, the greater the number that will be justified. There is thus a negative relationship between the interest rate and the level of investment.

Figure 14.5 "The Investment Demand Curve" shows an investment demand curve for the economy—a curve that shows the quantity of investment demanded at each interest rate, with all other determinants of investment unchanged. At an interest rate of 8%, the level of investment is $950 billion per year at point A. At a lower interest rate of 6%, the investment demand curve shows that the quantity of investment demanded will rise to $1,000 billion per year at point B. A reduction in the interest rate thus causes a movement along the investment demand curve.

Figure 14.5 The Investment Demand Curve

The investment demand curve shows the volume of investment spending per year at each interest rate, assuming all other determinants of investment are unchanged. The curve shows that as the interest rate falls, the level of investment per year rises. A reduction in the interest rate from 8% to 6%, for example, would increase investment from $950 billion to $1,000 billion per year, all other determinants of investment unchanged.

Heads Up!

To make sense of the relationship between interest rates and investment, you must remember that investment is an addition to capital, and that capital is something that has been produced in order to produce other goods and services. A bond is not capital. The purchase of a bond is not an investment. We can thus think of purchasing bonds as a financial investment—that is, as an alternative to investment. The more attractive bonds are (i.e., the higher their interest rate), the less attractive investment becomes. If we forget that investment is an addition to the capital stock and that the purchase of a bond is not investment, we can fall into the following kind of error: "Higher interest rates mean a greater return on bonds, so more people will purchase them. Higher interest rates will therefore lead to greater investment." That is a mistake, of course, because the purchase of a bond is not an investment. Higher interest rates increase the opportunity cost of using funds for investment. They reduce investment.

Other Determinants of Investment Demand

Perhaps the most important characteristic of the investment demand curve is not its negative slope, but rather the fact that it shifts often. Although investment certainly responds to changes in interest rates, changes in other factors appear to play a more important role in driving investment choices.

This section examines eight additional determinants of investment demand: expectations, the level of economic activity, the stock of capital, capacity utilization, the cost of capital goods, other factor costs, technological change, and public policy. A change in any of these can shift the investment demand curve.

Expectations

A change in the capital stock changes future production capacity. Therefore, plans to change the capital stock depend crucially on expectations. A firm considers likely future sales; a student weighs prospects in different occupations and their required educational and training levels. As expectations change in a way that increases the expected return from investment, the investment demand curve shifts to the right. Similarly, expectations of reduced profitability shift the investment demand curve to the left.

The Level of Economic Activity

Firms need capital to produce goods and services. An increase in the level of production is likely to boost demand for capital and thus lead to greater investment. Therefore, an increase in GDP is likely to shift the investment demand curve to the right.

To the extent that an increase in GDP boosts investment, the multiplier effect of an initial change in one or more components of aggregate demand will be enhanced. We have already seen that the increase in production that occurs with an initial increase in aggregate demand will increase household incomes, which will increase consumption, thus producing a further increase in aggregate demand. If the increase also induces firms to increase their investment, this multiplier effect will be even stronger.

The Stock of Capital

The quantity of capital already in use affects the level of investment in two ways. First, because most investment replaces capital that has depreciated, a greater capital stock is likely to lead to more investment; there will be more capital to replace. But second, a greater capital stock can tend to reduce investment. That is because investment occurs to adjust the stock of capital to its desired level. Given that desired level, the amount of investment needed to reach it will be lower when the current capital stock is higher.

Suppose, for example, that real estate analysts expect that 100,000 homes will be needed in a particular community by 2010. That will create a boom in construction—and thus in investment—if the current number of houses is 50,000. But it will create hardly a ripple if there are now 99,980 homes.

How will these conflicting effects of a larger capital stock sort themselves out? Because most investment occurs to replace existing capital, a larger capital stock is likely to increase investment. But that larger capital stock will certainly act to reduce net investment. The more capital already in place, the less new capital will be required to reach a given level of capital that may be desired.

Capacity Utilization

The capacity utilization rate measures the percentage of the capital stock in use. Because capital generally requires downtime for maintenance and repairs, the measured capacity utilization rate typically falls below 100%. For example, the average manufacturing capacity utilization rate was 79.7% for the period from 1972 to 2007. In November 2008 it stood at 72.3.

If a large percentage of the current capital stock is being utilized, firms are more likely to increase investment than they would if a large percentage of the capital stock were sitting idle. During recessions, the capacity utilization rate tends to fall. The fact that firms have more idle capacity then depresses investment even further. During expansions, as the capacity utilization rate rises, firms wanting to produce more often must increase investment to do so.

The Cost of Capital Goods

The demand curve for investment shows the quantity of investment at each interest rate, all other things unchanged. A change in a variable held constant in drawing this curve shifts the curve. One of those variables is the cost of capital goods themselves. If, for example, the construction cost of new buildings rises, then the quantity of investment at any interest rate is likely to fall. The investment demand curve thus shifts to the left.

The $10,000 cost of the solar energy system in the example given earlier certainly affects a decision to purchase it. We saw that buying the system makes sense at interest rates below 10% and does not make sense at interest rates above 10%. If the system costs $5,000, then the interest return on the investment would be 20% (the annual saving of $1,000 divided by the $5,000 initial cost), and the investment would be undertaken at any interest rate below 20%.

Other Factor Costs

Firms have a range of choices concerning how particular goods can be produced. A factory, for example, might use a sophisticated capital facility and relatively few workers, or it might use more workers and relatively less capital. The choice to use capital will be affected by the cost of the capital goods and the interest rate, but it will also be affected by the cost of labor. As labor costs rise, the demand for capital is likely to increase.

Our solar energy collector example suggests that energy costs influence the demand for capital as well. The assumption that the system would save $1,000 per year in energy costs must have been based on the prices of fuel oil, natural gas, and electricity. If these prices were higher, the savings from the solar energy system would be greater, increasing the demand for this form of capital.

Technological Change

The implementation of new technology often requires new capital. Changes in technology can thus increase the demand for capital. Advances in computer technology have encouraged massive investments in computers. The development of fiber-optic technology for transmitting signals has stimulated huge investments by telephone and cable television companies.

Public Policy

Public policy can have significant effects on the demand for capital. Such policies typically seek to affect the cost of capital to firms. The Kennedy administration introduced two such strategies in the early 1960s. One strategy, accelerated depreciation, allowed firms to depreciate capital assets over a very short period of time. They could report artificially high production costs in the first years of an asset's life and thus report lower profits and pay lower taxes. Accelerated depreciation did not change the actual rate at which assets depreciated, of course, but it cut tax payments during the early years of the assets' use and thus reduced the cost of holding capital.

The second strategy was the investment tax credit, which permitted a firm to reduce its tax liability by a percentage of its investment during a period. A firm acquiring new capital could subtract a fraction of its cost—10% under the Kennedy administration's plan—from the taxes it owed the government. In effect, the government "paid" 10% of the cost of any new capital; the investment tax credit thus reduced the cost of capital for firms.

Though less direct, a third strategy for stimulating investment would be a reduction in taxes on corporate profits (called the corporate income tax). Greater after-tax profits mean that firms can retain a greater portion of any return on an investment.

A fourth measure to encourage greater capital accumulation is a capital gains tax rate that allows gains on assets held during a certain period to be taxed at a different rate than other income. When an asset such as a building is sold for more than its purchase price, the seller of the asset is said to have realized a capital gain. Such a gain could be taxed as income under the personal income tax. Alternatively, it could be taxed at a lower rate reserved exclusively for such gains. A lower capital gains tax rate makes assets subject to the tax more attractive. It thus increases the demand for capital. Congress reduced the capital gains tax rate from 28% to 20% in 1996 and reduced the required holding period in 1998. The Jobs and Growth Tax Relief Reconciliation Act of 2003 reduced the capital gains tax further to 15% and also reduced the tax rate on dividends from 38% to 15%. A proposal to eliminate capital gains taxation for smaller firms was considered but dropped before the stimulus bill of 2009 was enacted.

Accelerated depreciation, the investment tax credit, and lower taxes on corporate profits and capital gains all increase the demand for private physical capital. Public policy can also affect the demands for other forms of capital. The federal government subsidizes state and local government production of transportation, education, and many other facilities to encourage greater investment in public sector capital. For example, the federal government pays 90% of the cost of investment by local government in new buses for public transportation.

Marginal Efficiency of Capital MEC

The marginal efficiency of capital displays the expected rate of return on investment, at a particular given time. The marginal efficiency of capital is compared to the rate of interest.

This theory suggests investment will be influenced by:

1. The marginal efficiency of capital
2. The interest rates

Generally, a lower interest rate makes investment relatively more attractive.

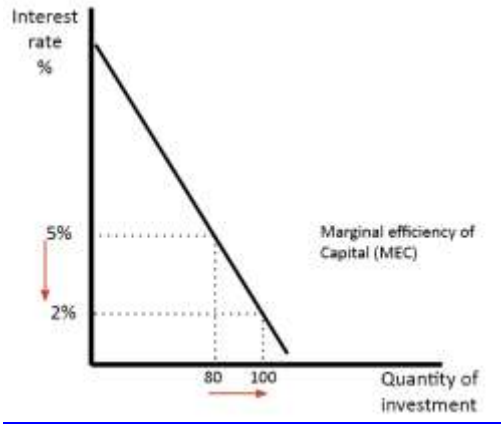
If interest rates, were 3%, then firms would need an expected rate of return of at least 3% from their investment to justify the investment.

If the marginal efficiency of capital was lower than the interest rate, the firm would be better off not investing, but saving the money.

Why are interest rates important for determining the marginal efficiency of capital?

To finance investment, firms will either borrow or reduce savings. If interest rates are lower, it's cheaper to borrow, or their savings give a lower return making investment relatively more attractive.

Marginal Efficiency of Capital



- A cut in interest rates from 5% to 2% will increase investment from 80 to 100.
- The alternative to investing is saving money in a bank; this is the opportunity cost of investment.

If the rate of interest is 5%, then only projects with a rate of return of greater than 5% will be profitable.

How responsive is investment to interest rates?

In Keynesian investment theory, interest rates are one important factor. However, in a liquidity trap, investment may be unresponsive to lower interest rates. In some circumstances, demand for investment is very interest inelastic.

In a liquidity trap, business confidence may be very low. Therefore, despite low-interest rates, firms don't want to invest because they have low expectations of future profits.

Factors which shift the marginal efficiency of capital

At the same rate of interest rate – more investment projects are demanded. This could reflect an improvement in economic circumstances, which encourage firms to invest.

Factors that can affect investment schedule

1. The cost of capital. If capital is cheaper, then investment becomes more attractive. For example, the development of steel rails made railways cheaper and encouraged more investment.

2. Technological change. If there is an improvement in technology, it can make investment more worthwhile.

3. Expectations and business confidence. If people are optimistic about the future, they will be willing to invest because they expect higher profits. In a recession, people may become very pessimistic, so even lower interest rates don't encourage investment. (e.g. during recession 2008-12, interest rates were zero, but investment low)

4. Supply of finance. If banks are more willing to lend money investment will be easier.

5. Demand for goods. Higher demand will increase the profitability of capital investment.

6. The rate of Taxes. Higher taxes will discourage investment. Sometimes, governments offer tax breaks to encourage investment.

Marginal efficiency of investment

Marginal efficiency of investment, in economics, expected rates of return on investment as additional units of investment are made under specified conditions and over a stated period of time. A comparison of these rates with the going rate of interest may be used to indicate the profitability of investment. The rate of return is computed as the rate at which the expected stream of future earnings from an investment project must be discounted to make their present value equal to the cost of the project.

As the quantity of investment increases, the rates of return from it may be expected to decrease because the most profitable projects are undertaken first. Additions to investment will consist of projects with progressively lower rates of return. Logically, investment would be undertaken as long as the marginal efficiency of each additional investment exceeded the interest rate. If the interest rate were higher, investment would be unprofitable because the cost of borrowing the necessary funds would exceed the returns on the investment. Even if it were unnecessary to borrow funds for the investment, more profit could be made by lending out the available funds at the going rate of interest.

The British economist John Maynard Keynes used this concept but coined a slightly different term, the marginal efficiency of capital, in arguing for the importance of profit expectations rather than interest rates as determinants of the level of investment.

Some of the major factors which affect the inducement to invest are discussed below:

(1) Element of Uncertainty:

According to Keynes, the MEC is more volatile than the rate of interest. This is because the prospective yield of capital assets depends upon the business expectations. These business expectations are very uncertain. "They may change quickly and drastically in response to the general mood of the business community, rumours, news of technical developments, political events, even directors' ulcers may cause a sudden rise or fall of the expected rate of yield."

As a result, it is difficult to calculate the expected annual returns on the life of a capital asset. As Keynes himself wrote, "If we speak frankly we have to admit that our basis of knowledge for estimating the yield ten years hence of a railway, a copper mine, a textile factory, the goodwill of a

patent medicine, an Atlantic liner, a building in the city of London amounts to little and sometimes nothing, or even five years hence."

Further, because of uncertainty, investment projects usually have a short pay-off period. Capital assets become obsolete earlier than their expected life due to rapid technological developments. The rate of depreciation also does not remain constant and varies much. So firms have a tendency to invest only if they are in a position to recover the capital outlay in a short period. These factors tend to bring instability in the investment function.

(2) Existing Stock of Capital Goods:

If the existing stock of capital goods is large, it would discourage potential investors from entering into the making of goods. Again, the induced investment will not take place if there is excess or idle capacity in the existing stock of capital assets.

In case the existing stock of machines is working to its full capacity, an increase in the demand for goods manufactured by them will raise the demand for capital goods of this type and raise the inducement to invest. But it is the capital stock which influences the MEC. The MEC and the capital stock are inversely related.

(3) Level of Income:

If the level of income rises in the economy through rise in money wage rates and other factor prices, the demand for goods will rise which will, in turn, raise the inducement to invest. Contrariwise, the inducement to investment will fall with the lowering of income levels.

(4) Consumer Demand:

The present and future demand for the products greatly influences the level of investment in the economy. If the current demand for consumer goods is increasing rapidly more investment will be made. Even if we take the future demand for the products, it will be considerably influenced by their current demand and both will influence the level of investment. Investment will be low if the demand is low, and vice versa.

(5) Liquid Assets:

The amount of liquid assets with the investors also influences the inducement to invest. If they possess large liquid assets, the inducement to invest is high. This is especially the case with those firms which keep large reserve funds and undistributed profits. On the contrary, the inducement to invest is low for investors having little liquid assets.

(6) Inventions and Innovations:

Inventions and innovations tend to raise the inducement to invest. If inventions and technological improvements lead to more efficient methods of production which reduce costs, the MEC of new capital assets will rise. Higher MEC will induce firms to make larger investments in the new capital assets and in related ones.

The absence of new technologies will mean low inducement to invest. An innovation also includes the opening of new areas. This requires the development of means of transport, the construction of houses, etc., leading to new investment opportunities. Thus inducement to invest rises.

(7) New Products:

The nature of new products in terms of sales and costs may also influence their MEC and hence investment. If the sale prospects of a new product are high and the expected revenues more than the costs, the MEC will be high which will encourage investment in this and related industries.

For example, the invention of television must have encouraged the electronics industry to invest in these capital assets and used them to produce television sets, if they had expected profits to be higher than costs. Thus lower maintenance and operating costs in the case of new products are important in increasing the inducement to invest.

(8) Growth of Population:

A rapidly growing population means a growing market for all types of goods in the economy. To meet the demand of an increasing population in all brackets, investment will increase in all types of consumer goods industries. On the other hand, a declining population results in a shrinking market for goods thereby lowering the inducement to invest.

(9) State Policy:

The economic policies of the government have an important influence on the inducement to invest in the country. If the state levies heavy progressive taxes on corporations, the inducement to invest is low, and vice versa. Heavy indirect taxation tends to raise the prices of commodities and adversely affects their demand thereby lowering the inducement to invest, and vice versa.

If the state follows the policy of nationalisation of industries, the private enterprise would be discouraged to invest. On the other hand, if the state encourages private enterprise by providing credit, power and other facilities, inducement to invest will be high.

(10) Political Climate:

Political conditions also affect the inducement to invest. If there is political instability in the country, the inducement to invest may be affected adversely. In the struggle for power, the rival parties may create unrest through hostile trade union activities thus creating uncertainty in business.

On the other hand, a stable government creates confidence in the business community whereby the inducement to invest is raised. Similarly, the danger of a revolution or war with some other country has an adverse effect on the inducement to invest, whereas peace and prosperity tend to raise it.

The Investment Multiplier
in economic factor that, when increased or changed, causes increases or changes in many other related economic variables. In terms of gross domestic product, the multiplier effect causes gains in total output to be greater than the change in spending that caused it.

What Is a Multiplier?
In economics, a multiplier broadly refers to an economic factor that, when increased or changed, causes increases or changes in many other related economic variables. In terms of gross domestic product, the multiplier effect causes gains in total output to be greater than the change in spending that caused it.

The term multiplier is usually used in reference to the relationship between government spending and total national income. Multipliers are also used in explaining fractional reserve banking, known as the deposit multiplier.

The Fiscal Multiplier
The fiscal multiplier is the ratio of a country's additional national income to the initial boost in spending or reduction in taxes that led to that extra income. For example, say that a national government enacts a $1 billion fiscal stimulus and that its consumers' marginal propensity to consume (MPC) is 0.75. Consumers who receive the initial $1 billion will save $250 million and spend $750 million, effectively initiating another, smaller round of stimulus. The recipients of that $750 million will spend $562.5 million, and so on.

The Investment Multiplier

An investment multiplier similarly refers to the concept that any increase in public or private investment has a more than proportionate positive impact on aggregate income and the general economy. The multiplier attempts to quantify the additional effects of a policy beyond those immediately measurable. The larger an investment's multiplier, the more efficient it is at creating and distributing wealth throughout an economy.

The Earnings Multiplier

The earnings multiplier frames a company's current stock price in terms of the company's earnings per share (EPS) of stock. It presents the stock's market value as a function of the company's earnings and is computed as (price per share/earnings per share).

This is also known as the price-to-earnings (P/E) ratio. It can be used as a simplified valuation tool for comparing relative costliness of the stocks of similar companies, and for judging current stock prices against their historical prices on an earnings relative basis.

The Equity Multiplier

The equity multiplier is a commonly used financial ratio calculated by dividing a company's total asset value by total net equity. It is a measure of financial leverage. Companies finance their operations with equity or debt, so a higher equity multiplier indicates that a larger portion of asset financing is attributed to debt. The equity multiplier is thus a variation of the debt ratio, in which the definition of debt financing includes all liabilities.

Multiplying Money

One popular multiplier theory and its equations were created by British economist John Maynard Keynes. Keynes believed that any injection of government spending created a proportional increase in overall income for the population, since the extra spending would carry through the economy. In his 1936 book, "The General Theory of Employment, Interest, and Money," Keynes wrote the following equation to describe the relationship between income (Y), consumption (C) and investment (I):

$$\begin{aligned} &Y = C + I \\ &\textbf{where:}\\ &Y=\text{income}\\ &C=\text{consumption}\\ &I=\text{investment}\\ \end{aligned}$$

$Y=C+I$
where:
Y=income
C=consumption
I=investment

The equation states that for any level of income, people spend a fraction and save/invest the remainder. He further defined the marginal propensity to save and the marginal propensity to consume (MPC), using these theories to determine the amount of a given income that is invested. Keynes also showed that any amount used for investment would be reinvested many times over by different members of society. For example, assume a saver invests $100,000 in a savings account at his bank.

Because the bank is only required to maintain a portion of that money on hand to cover deposits, it can loan out the remainder of the deposit to another party. Assume the bank loans out $75,000 of the initial deposit to a small construction company, who uses it to build a warehouse. The funds spent by the construction company go to pay electricians, plumbers, roofers, and various other parties to build it.

These parties then go on to spend the funds they receive according to their own interests. The $100,000 has earned a return for the investor, the bank, the construction company and the contractors that built the warehouse. Since Keynes' theory showed that investment was multiplied, increasing incomes for many parties, Keynes coined the term "multiplier" to describe the effect.

The deposit multiplier is frequently confused, or thought to be synonymous, with the money multiplier. However, although the two terms are closely related, they are not interchangeable. If banks loaned out all available capital beyond their required reserves, and if borrowers spent every dollar borrowed from banks, then the deposit multiplier and the money multiplier would be essentially the same.

In actual practice, the money multiplier, which designates the actual multiplied change in a nation's money supply created by loan capital beyond bank's reserves, is always less than the deposit multiplier, which can be seen as the maximum potential money creation through the multiplied effect of bank lending.

Multiplier Keynesian: Its Working, Operation, Importance and Criticism
Read this article to learn about the meaning, working, importance, leakages in the working and criticism of multiplier Keynesian.

Meaning and the Development:
The concept of 'Multiplier' occupies an important place in Keynesian theory of income, output and employment. It is an important tool of income propagation and business cycle analysis.

According to Keynes, employment depends upon effective demand, which in turn, depends upon consumption and investment (Y = C + I). Consumption function, as we have known, is stable in the short-run and MPC is less than unity.

Therefore, all the increases in income do not go to increase consumption to the extent of increment in income, with the result, that a gap comes to exist between the income (output) produced and consumed which must be made up by investment. Keynes believed that the initial increment in investment increases the final income by many times. To this relationship between an initial increase in investment and the final increase in aggregate income. Keynes gave the name of 'Investment Multiplier', also called 'Income Multiplier' by others.

The idea that a change in effective demand has multiplier effects on income and employment appeared in economic theory around the turn of the century. The theory of inflation developed by Wick-sell in his book 'Interest and Prices' is a multiplier theory, even if it is not clearly stated in such terms. N. Johannsen developed a lucid multiplier theorem—using the term—for the deflationary case in his theory of economic depressions, first published in 1903 and later reformulated in 1913.

According to Johannsen this "principle rests on the fact that those individuals whose incomes are reduced through the savings process in turn reduce their expenditure and thus further reduce total demand." More recently a detailed analysis of the multiplier process was given by R.F. Kahn. In his article Kahn gave a precise exposition of the same concepts but applied them to an expansionary process. However, the theory of multiplier became one of the focal points of discussion only when J.M. Keynes made it an integral part of his 'General Theory'.

The idea of multiplier originated as an explanation of the favourable effects of investment on total employment but it has become part and parcel of Keynesian theory of income and employment. Keynes adopted the notion of multiplier, an idea borrowed from R.F. Kahn, for income analysis. R.F. Kahn had through multiplier, traced the effect of an increase in investment on employment.

Keynes converted this into an income multiplier designed to show the relationship of a small increase in investment to final increase in income. The multiplier mechanism suggested that heavy spending—by government, business or consumers—would have a salutary impact on the national income.

It is very closely connected with the concept of the marginal propensity to consume and is considered as one of Keynes' path breaking contributions. As a matter of fact, Keynes' investment multiplier is a modification of Kahn's employment multiplier'. Multiplier is the ratio of the final change in income to the initial change in investment.

In other words, it is the ratio expressing the quantitative relationship between the final increase in national income and the increase in investment which induces the rise in income. Arithmetically, this

relationship is expressed as $\Delta Y = K. \Delta I$, where Δ (delta) stands for increases or changes, Y for national income, K for Multiplier and I for investment. Therefore, we get

$K = \Delta Y/\Delta I$, i.e., K (multiplier) is equal to the ratio of the increase in income to the increase in investment, which is responsible for the rise in income.

Thus, if investment in the economy increases by Rs. 1 crore and the national income rises by Rs. 3 crore, then the multiplier is 3. All this happens because whenever an investment is made in the economy, the effect is to increase total income not only by the amount of original investment but by a multiple of it.

The reason is that the investment not only expands the income in the industries where the investment is originally made but also in other industries whose products are demanded by men employed in investment industries. It may, however, be noted that the value of multiplier is, in fact, determined by the marginal propensity to consume. The multiplier is large or small according as the marginal propensity to consume is large or small.

Theoretically, the values of the multiplier can change; all the way, from one to infinity. It can never be one because consumption always increases when income increases (i.e., MPC is never zero). Further, multiplier can never be equal to infinity if Keynes' assumption of the MPC being less than unity is valid. Actual value of the multiplier varies from 2 to 4, according to the different estimates made from time to time.

Working Of the Multiplier:
Multiplier is the mechanism through which income gets propagated as a result of original investment. How a new investment brings about a multiple increase in income by increasing consumption is clear from the following example. This example gives us what may be described as a 'motion picture' of income propagation under certain assumptions.

Assuming the marginal propensity to consume as ½, let us assume further that there is an investment of Rs. 20 crore in public works. The MPC being ½ K (multiplier) will be 2[1/1-½=2] An investment of Rs. 20 crore will increase the total income by Rs. 40 crore. When an original investment of Rs. 20 crore is made, half of it will be spent on consumption by the income recipients (because MPC = ½?, Rs. 10 crore out of Rs. 20 crore will be spent on consumption in the first round).

In the second round, income shall increase by Rs. 10 crore. In the third round, income shall expand by Rs. 5 crore, in the fourth by Rs. 2.5 crore, in the fifth by Rs. 1.25 crore, and so on, till it has increased to Rs. 40 crore, i.e., 2 times the original investment. Thus, we note there is an infinite geometric series of the descending variety, viz., Rs. 20 cr. + Rs. 10 cr. + Rs. 5 cr. + Rs. 2.5 cr. + Rs. 1.25 cr…….. and so on adding up to Rs. 40 crore. We see that the multiplier is equal to the ratio of the increase in income to the increase in investment, i.e., Rs. 40cr/20cr = 2 . Therefore, the multiplier is 2.

It may, however, be noted that the whole process of income C, expansion is spread over time as the income does not increase to Rs. 40 crore all at once. Keynes, however, did not give much importance to time lags involved in the process of income generation. The simultaneous multiplier effects of investment on 50 income are shown in Fig. 14.1.

In this figure, CC consumption curve is drawn according to the MPC being ½ (0.5 at all income levels). E1Y1 gives us the equilibrium level of income.

For one reason or the other, investment rises from C + I to C + I + I'. The new curve C + I + I' intersects the 45° line at E2.

E2Y2 gives us the new level of income atY2. It is greater than the old level of income (Y1) by Y1Y2.

This is twice the difference between C + I and C + I + I' curves. Thus, assuming MPC of 1/2 and, therefore, the multiplier being 2, the original increase in investment leads to double the increase in income Y1Y2.

Reverse Operation of the Multiplier:

Multiplier is a double-edged weapon. It works in the backward direction as much as in the forward direction. The process of income propagation through multiplier does not work in the forward direction only. It is quite possible that it may work in the reverse direction depending upon the direction of the initial change in investment. Suppose, investment decreases by Rs. 20 crore, there will be a net reduction in income to the extent of Rs. 40 crore, (MPC = 1/2 and K = 2). The higher the MPC, the greater the value of the multiplier and greater the cumulative decline in income. In other words, a community with a high propensity to save is affected less by the reverse operation of the multiplier than the one with a low propensity to save.

A high multiplier would cause greater jerks and shocking decline of income whenever the investment falls. But there is one ray of hope—the MPC being less than one, multiplier is not infinity. Just as consumers do not spend the full increment of income on consumption, similarly, they do not curtail expenditure of consumption by the full extent of the decrement of income. The reverse operation of multiplier is shown in Fig. 14.2.

In this figure, the S curve (drawn according to the MPS being ½) is interested by the I curve to give us the equilibrium level of income Y1 at E1 Y1. When investment declines from I to K the income also declines from Y1 to Y2 and a new equilibrium E2Y2 is obtained. The incomes decreases by Y1 Y2 i.e., being double the decline in investment. Fig. 14.2

Logical Multiplier:

The multiplier as enunciated above is Keynesian multiplier, logical or tautological or simultaneous multiplier. It is so called because it assumes no time lag between the initial change in autonomous investment and ultimate change in income. In other words, it assumes that the change in all the three or basic variables is simultaneous, that is, investment, consumption and income—all change at the same time. Changes in them constitute the core of the multiplier process. Thus, Keynes' discussion of the multiplier runs mainly in terms of the "logical theory of the multiplier which holds good simultaneously without time lag at all moments of time".

This logical theory of the multiplier as given by Keynes has been criticized on many grounds, specially, its assumption of instantaneous responses in consumption to changes in investment outlays. In actual practice, however, things do take time to happen. There is always an expenditure lag between income and consumption. Sometime interval must elapse before the consumers spend their incomes on the purchase of goods and services.

They take time to adjust their consumption to the new incomes. The logical theory does not explain the path which the change in income follows as it moves from the old initial equilibrium to the new and final equilibrium position. Hence, this static multiplier theory of Keynes has been replaced by a dynamic multiplier theory which takes into account the time lags.

The main limitations and qualifications of static or logical multiplier are discussed below:

Multiplier Assumptions:
Yet another great limitation and qualification arises from the assumptions of multiplier on which Keynes' theory is based.

These are:

(i) That there is no change in the marginal propensity to consume during the adjustment process, which remains more or less constant.

(ii) That there is no induced investment (i.e., accelerator is not operating).

(iii) That the new higher level of investment is maintained long enough for the completion of the adjustment process.

(iv) That the output of consumer goods is responsive to effective demand for these.

(v) That there is complete absence of government activity like taxation or expenditure.

(vi) That there is no time lag between the receipt of income and its expenditure.

(vii) That there is a closed economy.

Importance of Multiplier:
The introduction of multiplier analysis in income theory is one of Keynes' path-breaking contributions, in as much as it has not only enriched economic analysis but also profoundly affected economic policies. "It is true that Lord Keynes did not discover the multiplier, that honour belongs to Mr. R.F. Kahn. But he gave it the role, it plays today, by transforming it from an instrument for the analysis of 'road-building' into one for the analysis of 'income building'. From his own and subsequent work, we now have a theory, or at least its sound beginning, of income generation and propagation, which has magnificent sweep and simplicity. It set a fresh wind blowing through the structure of economic thought".

From the foregoing qualifications and limitations it should never be concluded that the concept of multiplier is of little use. Despite the structures, multiplier has been of great importance both to economic theory and policy. Firstly, it established the immense importance of investment as the major dynamic element in the economy. Not only did it indicate the direct creation of employment, it also revealed that income was generated throughout the system like a stone causing ripples in a lake.

On the side of practical economic policy it is of the utmost importance because the case for public investment has all the more been strengthened by the introduction of this concept; it tells us that a small increment in investment leads to a large increase in investment and employment. A knowledge of multiplier is of vital importance during the course of business-cycle studies and for its accurate forecasting and control. Further, it is a useful analytical tool for following suitable employment policies. Thus, we find that the theory of multiplier has brought almost a virtual revolution in the thinking of economists and policy-makers alike. With the use of this concept, the approach has radically changed from 'no intervention' to the growth of the public sector in practically all the countries of the world.

Leakages in The Working Of Multiplier:
We have learnt about the timeless and instantaneous multiplier. But in actual practice the working of the multiplier is affected by a large number of considerations. We see that the whole of the increment in income is not spent on consumption nor is it entirely saved. Therefore, the value of the multiplier is neither one nor-infinity. This is because there are several leakages from the income-stream as a result of which the process of income propagation is slowed down.

Important leakages are as follows:

1. Saving:
Saving constitutes an important leakage to the process of income propagation. If the whole of the increment in income was to be spent on consumption (i.e., if MPC is one) then, 'once- for-all' increase in investment would go on creating additional consumption so that the full employment would ensure. This is not the case in actual practice, because a part of the increased income is not spent on consumption but saved and 'peters out' of the income stream, thereby limiting the value of the multiplier. In fact, the whole of saving forms a sort of leakage arid higher the propensity to save, the lower is the value of multiplier. Further, for various reasons these savings constitute an important leakage.

2. Debt Cancellation:
It has been observed that part of the income received by the people in the economy may be used for paying off old debts to the banks and individuals, who may, in turn, fail to spend. As such, the consumption is not stimulated and the value of the multiplier is thereby reduced.

3. Imports:
If there is an excess of imports over exports, part of the increased income as a result of increased investment will go to increase income in the foreign countries at least in the short period. It is argued that in the long period, the increased income in the foreign countries will go to increase the demand for exports and thus will have beneficial effects on the income of the country importing goods. But this may or may not be the case, as it presupposes free trade. In this way imports and the money spent on

the imported goods constitute an important leakage.

4. Price Inflation:
Price inflation constitutes another important leakage from the income stream of an economy. As long as there is unemployment of resources and factors of production, increase in investment will have expansionary effects. But once that full employment or near full employment of the resources has been attained, increase in investment will go to raise prices and the cost of the factors of production, because at this level the factors of production become scarce and a competition ensues between the consumer goods industries and investment goods industries for securing the scarce resources even at higher prices. Thus, as a result of price inflation a major part of the increased income is dissipated instead of promoting consumption, income and employment.

5. Hoarding:
Hoarding or the tendency of the people to hold idle cash balances forms another leakage. If the people have high liquidity preference and a tendency to keep idle cash balances they will diminish the expenditure on consumption in the economy, thereby restricting the value of the multiplier.

6. Purchase of Stocks and Securities:
Sometimes, people purchase old stocks and securities with the newly created income and do not spend it on increased consumption. Some of them purchase new insurance policies. Thus, this type of financial investment severely restricts the value of the multiplier, as the increased incomes, instead of being spent on consumption, are spent on nominal (not real) investments.

All these factors constitute potential leakage from the income stream resulting from an expansion of new investment. This new income under such circumstances, does not give rise to secondary consumption expenditures. It is, therefore, highly desirable that to have the desired results of multiplier, these leakages should be plugged. To the extent these leakages from the income stream can be controlled, the original increase in investment will have greater multiplier effects.

Criticism:
Criticism is leveled on the ground that Keynes' theory of multiplier rests on the simple assumption of increases in consumption as a result of increases in income and, further, on the MPC being less than one. Actual studies show that the relationship between income and consumption is not so simple as presumed by Keynes, nor is consumption the function of income alone. Multiplier depends upon a large number of limitations and qualifications like the availability of consumer goods, maintenance of investment, direction of investment, multiplier period, and takes no account of the effect of induced consumption on investment, besides completely overlooking the time-element.

Keynes' logical theory of the multiplier takes into consideration the effects of increases in consumption as a result of increases in income, but it takes no account of the effects of increases in consumption on investment (induced investment). On this ground alone, the theory has been severely criticized by D.H. Robertson, R.M, Goodwin and A.P. Lerner.

These writers rightly grudge the undue importance and attention given to the multiplier, which they feel, in a way, is too bad; "since the concept, often seems like nothing but a cheap jack way of getting something for nothing and appears to carry with it a spurious numerical accuracy." Prof. A.G. Hart has insisted, no doubt correctly, that the multiplier concept is a useless 'fifth wheel'. It adds nothing to the ideas or result already implied in the use of consumption function. Haberler with some justice, accused Keynes of dealing in tautology when he discussed the multiplier—that is of defining something as necessarily true, and then proclaiming as discovery the 'truth' of the relationship made inevitable by definition.

Prof. Hazlitt has also criticized the concept of multiplier rather bitterly. He calls it 'strange concept', 'a myth, much ado about noting'. He asks, "What reason is there to suppose that there is such a thing as the multiplier"? He doubted if there could be any precise or mechanical relationship between social income, consumption, investment and extent of employment. He called it a worthless toy made familiar by monetary cranks. According to Prof Hutt, "the conventional multiplier apparatus is rubbish and that it should be expunged from the text books".

Thus, the main points of criticism against the concept of multiplier as given by Keynes are that:

(i) It assumes as instantaneous relationship between income, consumption and investment—it is a timeless phenomenon.

(ii) It is of static nature which is unsuited to the changing process of the dynamic world, it fails to reckon the influence of time lags and its results are obtained only under static conditions,

(iii) It ignores the influence of induced consumption on induced investment, i.e., there is a relationship between the demand for capital goods and the demand for consumption goods, i.e., the demand for capital goods is a 'derived demand',

(iv) Further, its sole emphasis on consumption is also not proper. It would be more realistic to speak of a 'marginal propensity to spend' rather than to consume,

(v) Again, Haberler feels that this multiplier theory is an un-verified hypothesis because Keynes offers no adequate proof except a number of vague observations,

(vi) Prof. L.R. Klein has pointed out that empirical studies in respect of the behaviours of aggregate consumption in relation to aggregate income, show that actual trends in spending have a much more complicated relationship which may be non-linear and the assumption of linear relation between aggregate consumption and aggregate income is open to question.

(vii) Again, consumption is not the function of income alone and the marginal propensity to consume is not constant as was assumed by Keynes as the basis of multiplier.

Nevertheless, the multiplier idea has been widely used as a way of summarising the workings of the Keynesian model, and a whole body of literature has grown up which employs this terminology. A strong defence has been put up by writers like Harrod, Hansen and Samuelson who have tried to deal with the criticism and made the whole analysis dynamic. In the words of S.E. Harris, we may sum up the position as follows: "On the discussion of the multiplier, many economists have gone on fishing expeditions, but though they had many bites they did not catch any large fish. Indeed, they have added much to Keynes' relatively simple and unverified presentation".

Assumptions of Multiplier
They are as follows: (1) There is change in autonomous investment and that induced investment is absent. (2) The marginal propensity to consume is constant. (3) Consumption is a function of current income. (4) There are no tine lags in the multiplier process

The five major leakage with multiplier process are as follows: 1. Paying off debts 2. Holding of idle cash balances 3. Imports 4. Taxation 5. Increase in prices.

However, there are various leakages in income generation process which reduce the size of multiplier.

1. Paying off debts:
The first leakage in the multiplier process occurs in the form of payment of debts by the people, especially by businessmen. In the real world, all income received by the people as a result of some increase in investment is not consumed.

A part of the increment in income is used for paying back the debts which the people have taken from moneylenders, banks or other financial institutions. The incomes used for paying back the debts do not get spent on consumer goods and services and therefore leak away from the income stream. This reduces the size of the multiplier.

2. Holding of idle cash balances:
If the people hold a part of their increment in income as idle cash balances and do not use them for consumption, they also constitute leakage in the multiplier process. As we have seen, people keep a part of their income for satisfying their precautionary and speculative motives, money kept for such purposes is not consumed and therefore does not appear in the successive rounds of consumption expenditure and therefore reduces the increment in total income and output.

3. Imports:
In our above analysis of the working of the multiplier process we have taken the example of a closed economy, that is, an economy with no foreign trade. If it is an open economy as is usually the case, then a part of increment in income will also be spent on the imports of consumer goods.

The proportion of increments in income spent on the imports of consumer goods will generate income in other countries and will not help in raising income and output in the domestic economy. Therefore, imports constitute another important leakage in the multiplier process.

4. Taxation:
Taxation is another important leakage in the multiplier process. The increments in income which the people receive as a result of increase in investment are also in part used for payment of taxes.

Therefore, the money used for payment of taxes does not appear in the successive rounds of consumption expenditure in the multiplier process, and therefore multiplier is reduced to that extent. However, if the money raised through taxation is spent by the Government, the leakage through taxation will be offset by the increase in Government expenditure.

But it is not necessary that all the money raised through taxation is spent by the Government as it happens when Government takes a surplus budget. No doubt, if the Government expenditure increases by an amount equal to the taxation, it would not have any adverse effect on the increase in income and investment and in this way there would be no leakage in the multiplier process.

5. Increase in prices:
Price inflation constitutes another important leakage in the working of the multiplier process in real terms. As we have noted above, the multiplier works in real terms only when as a result of increase in money income and aggregate demand, output of consumer goods is also increased.

When output of consumer goods cannot be easily increased, a part of the increase in the money income and aggregate demand raises prices of the goods rather than their output. Therefore, the multiplier is reduced to the extent of price inflation.

In developing countries like India the extra incomes and demand are mostly spent on food grains whose output cannot be increased so easily. Therefore, the increments in demand raise the prices of goods to a greater extent than the increase in their output. Besides, in developing countries like India, there is not much excess capacity in many consumer goods industries, especially in agriculture and other wage-goods industries.

Therefore, when income and demand increase as a result of increase in investment, it generally raises the prices of these goods rather than their output and therefore weakens the working of the multiplier in real terms.

Thus, it is often asserted that Keynesian theory of multiplier is not very much relevant to the conditions of developing countries like India. The above various leakages reduce the multiplier effect of the investment undertaken. If these leakages are plugged, the effect of change in investment on income and employment would be greater.

Multipliers in Economics: Investment, Period Multiplier and Employment Multiplier!

Introduction:
The concept of multiplier was first developed by R.F. Kahn in his article “The Relation of Home Investment to Unemployment” in the Economic Journal of June 1931. Kahn’s multiplier was the Employment Multiplier. Keynes took the idea from Kahn and formulated the Investment Multiplier.

Contents:

The Investment Multiplier
The Dynamic or Period Multiplier
The Employment Multiplier
1. The Investment Multiplier:

Keynes considers his theory of multiplier as an integral part of his theory of employment. The multiplier, according to Keynes, "establishes a precise relationship, given the propensity to consume, between aggregate employment and income and the rate of investment. It tells us that, when there is an increment of investment, income will increase by an amount which is K times the increment of investment" i.e., $\Delta Y=K\Delta I$.

In the words of Hansen, Keynes' investment multiplier is the coefficient relating to an increment of investment to an increment of income, i.e., $K=\Delta Y/\Delta I$, where Y is income, I is investment, Δ is change (increment or decrement) and K is the multiplier.

In the multiplier theory, the important element is the multiplier coefficient, K which refers to the power by which any initial investment expenditure is multiplied to obtain a final increase in income. The value of the multiplier is determined by the marginal propensity to consume. The higher the marginal propensity to consume, the higher is the value of the multiplier, and vice versa.

The relationship between the multiplier and marginal propensity to consume is as follows:

Since c is the marginal propensity to consume, the multiplier K is, by definition, equal to 1-1/c. The multiplier can also be derived from the marginal propensity to sax e (MPS) and it is the reciprocal of MPS, K = 1/MPS.

The table shows that the size of the multiplier varies directly with the MPC and inversely with the MPS. Since the MPC is always greater than zero and less than one (i.e., O < MPC < I), the multiplier is always between one and infinity (i.e., 1 < K <).

If the multiplier is one, it means that the whole increment of income is saved and nothing is spent because the MPC is zero. On the other hand, an infinite multiplier implies that MPC is equal to one and the entire increment of income is spent on consumption. It will soon lead to full employment in the economy and then create a limitless inflationary spiral. But these are rare phenomena. Therefore, the multiplier coefficient varies between one and infinity.

Working of the Multiplier:
The multiplier works both forward and backward. First, we study its forward working. The multiplier theory explains the cumulative effect of a change in investment on income via its effect on consumption expenditure.

Forward Operation:
We first take the "sequence analysis" which shows a "motion picture" of the process of income propagation. An increase in investment leads to increased production which creates income and generates consumption expenditure. This process continues in dwindling series till no further increase in income and expenditure is possible. This is a legless instantaneous process in a static framework, as explained by Keynes.

Suppose that in an economy MPC is 1/2 and investment is raised by Rs 100 crores. This will immediately lead to a rise in production and income by Rs 100 crores. One-half of this new income will be immediately spent on consumption goods which will lead to increase in production and income by the same amount, and so on. The process is set out in Table II.

It reveals that an increment of Rs 100 crores of investment in the primary round leads to the same increase in income. Of this, Rs 50 crores are saved and Rs 50 crores are spent on consumption which go to increase income by the same amount in the second round.

This dwindling process of income generation continues in the secondary rounds till the total income generated from Rs 100 crores of investment rises to Rs 200 crores. This is also clear from the multiplier formula, $\Delta Y= K\Delta I$ or 200 = 2 x 100, where K = 2 (MPC = 1/2) and ΔI = Rs 100 crores.

This process of income propagation as a result of increase in investment is shown diagrammatically in Figure 1.

The C curve has a slope of 0.5 to show the MPC equal to one-half. C + I is the investment curve which intersects the 45° line at E1 so that the old equilibrium level of income is OY1. Now there is and increase in investment of ΔI as shown by the distance between C + I and C + I + ΔI curves. This curve intersects the 45° line at E2 to give OY2 as the new income. Thus the rise in income Y1Y2 as shown by ΔY is twice the distance between C + I and C + I + ΔI, since the MPC is one-half.

The same results can be obtained if MPS is taken so that when income increases, savings also increase to equal the new investment at a new equilibrium level of income. This is shown in Figure 2. S is the saving function with a slope of 0.5 to show MPS of one-half. I is the old investment curve which cuts S at E1; so that OY1 is the old equilibrium level of income.

The increase in investment ΔI is superimposed on the ΔI curve in the shape of a new investment curve I + ΔI which is intersected by the S curve at E2 to give OY2 as the new equilibrium level of income. The rise in income Y1-Y2 (shown as ΔY) is exactly double the increase in investment ΔI, as the MPS is one-half.

Backward Operation:
The above analysis pertains to the forward operation of the multiplier. If, however, investment decreases, instead of increasing, the multiplier operates backward. A reduction in investment will lead to contraction of income and consumption which, in turn, will lead to cumulative decline in income and consumption till the contraction in aggregate income is the multiple of the initial decrease in investment.

Suppose investment decreases by Rs 100 crores. With an MPC = 0.5 and K=2, consumption expenditure would keep on declining till aggregate income is decreased by Rs 200 crores. In terms of multiplier formula, -ΔY = K (- ΔI), we get—200 = 2 (-100).

The magnitude of contraction due to the backward operation of the multiplier depends on the value of MPC. The higher the MPC, the greater is the value of multiplier and the greater the cumulative decline in income, and vice versa. On the contrary, the higher the MPS, the lower is the value of the multiplier and the smaller the cumulative decline in income, and vice versa.

Thus, a community with a high propensity to consume (or low propensity to save) will be hurt more by the reverse operation of the multiplier than one with a low propensity to consume (or high propensity to save).

Diagrammatically, the reverse operation also can be explained in terms of Figures 1. and 2. Taking Figure 1., when investment decreases, the investment function C + I + ΔI shifts downward to C + I. As a result, the equilibrium level also shifts from E2 to E1 to and income declines from OY1 to OY2.

The MPC being 0.5, the fall in income Y1Y2 is exactly double the decline in investment as shown by the distance between C + I + ΔI and C + I. Similarly, in Figure 2 when investment falls, the investment function I + ΔI shifts downward as I curve and income decreases from OY2 to OY1. The MPS being 0.5, the decrease in income Y2Y1 is double the decline in investment as measured by the distance between I + ΔI and I curves.

Assumptions of Multiplier:
Keynes's theory of the multiplier works under certain assumptions which limit the operation of the multiplier. They are as follows:

(1) There is change in autonomous investment and that induced investment is absent.

(2) The marginal propensity to consume is constant.

(3) Consumption is a function of current income.

(4) There are no time lags in the multiplier process. An increase (decrease) in investment instantaneously leads to a multiple increase (decrease) in income.

(5) The new level of investment is maintained steadily for the completion of the multiplier process.

(6) There is net increase in investment.

(7) Consumer goods are available in response to effective demand for them.

(8) There is surplus capacity in consumer goods industries to meet the increased demand for consumer goods in response to a rise in income following increased investment.

(9) Other resources of production are also easily available within the economy.

(10) There is an industrialised economy in which the multiplier process operates.

(11) There is a closed economy unaffected by foreign influences.

(12) There are no changes in prices.

(13) The accelerator effect of consumption on investment is ignored.

(14) There is less than full employment level in the economy.

Leakages of Multiplier:
Leakages are the potential diversions from the income stream which tend to weaken the multiplier effect of new investment. Given the marginal propensity to consume, the increase in income in each round declines due to leakages in the income stream and ultimately the process of income propagation "peters out." (See Table II).

The following are the important leakages:

1. Saving:

Saving is the most important leakage of the multiplier process. Since the marginal propensity to consume is less than one, the whole increment in income is not spent on consumption. A part of it is saved which peters out of the income stream and the increase in income in the next round declines.

Thus the higher the marginal propensity to save, the smaller the size of the multiplier and the greater the amount of leakage out of the income stream, and vice versa. For instance, if MPS = 1/6, the multiplier is 6, according to the formula K = 1/MPS; and the MPS of 1/3 gives a multiplier of 3.

2. Strong Liquidity Preference:

If people prefer to hoard the increased income in the form of idle cash balances to satisfy a strong liquidity preference for the transaction, precautionary and speculative motives, that will act as a leakage out of the income stream. As income increases people will hoard money in inactive bank deposits and the multiplier process is checked.

3. Purchase of Old Stocks and Securities:

If a part of the increased income is used in buying old stocks and securities instead of consumer goods, the consumption expenditure will fall and its cumulative effect on income will be less than before. In other words, the size of the multiplier will fall with a fall in consumption expenditure when people buy old stocks and shares.

4. Debt Cancellation:

If a part of increased income is used to repay debts to banks, instead of spending it for further consumption, that part of the income peters out of the income stream. In case, this part of the increased income is repaid to other creditors who save or hoard it, the multiplier process will be arrested.

5. Price Inflation:

When increased investment leads to price inflation, the multiplier effect of increased income may be dissipated on higher prices. A rise in the prices of consumption goods implies increased expenditure on them. As a result, increased income is absorbed by higher prices and the real consumption and income fall. Thus price inflation is an important leakage which tends to dissipate increase in income and consumption on higher prices rather than in increasing output and employment.

6. Net Imports:

If increased income is spent on the purchase of imported goods it acts as a leakage out of the domestic income stream. Such expenditure fails to effect the consumption of domestic goods. This argument can be extended to net imports when there is an excess of imports over exports thereby causing a net outflow of funds to other countries.

7. Undistributed Profits:

If profits accruing to joint stock companies are not distributed to the shareholders in the form of dividend but are kept in the reserve fund, it is a leakage from the income stream. Undistributed profits with the companies tend to reduce the income and hence further expenditure on consumption goods thereby weakening the multiplier process.

8. Taxation:

Taxation policy is also an important factor in weakening the multiplier process. Progressive taxes have the effect of lowering the disposable income of the taxpayers and reducing their consumption expenditure. Similarly commodity taxation tends to raise the prices of goods, and a part of increased income may be dissipated on higher prices. Thus increased taxation reduces the income stream and lowers the size of the multiplier.

9. Excess Stocks of Consumption Goods:

If the increased demand for consumption goods is met from the existing excess stocks of consumption goods there will be no further increase in output, employment and income and the multiplier process will come to a halt till the old stocks are exhausted.

10. Public Investment Programmes:

If the increase in income as a result of increased investment is affected by public expenditures, it may fail to induce private enterprise to spend that income for further investment due to the following reasons.

(a) Public investment programmes may raise the demand for labour and materials leading to a rise in the costs of construction so as to make the undertaking of some private projects unprofitable.

(b) Government borrowing may, if not accompanied by a sufficiently liberal credit policy on the part of the monetary authority, increase the rate of interest and thus discourage private investment.

(c) Government operations may also injure private investors' confidence by arousing animosity or fears of nationalisation.

Criticism of Multiplier:
The multiplier theory has been severely criticised by the post-Keynesian economists on the following grounds:

1. Merely Tautological Concept. Prof. Haberler has criticised Keynes' multiplier as tautological. It is a truism which defines the multiplier as necessarily true as $K = 1/1 - \Delta C/\Delta Y$. pointed by Professor Hansen, "Such a coefficient is a mere arithmetic multiplied i.e., a truism) and not a true behaviour multiplier based on a behaviour pattern which establishes a verifiable relation between consumption and income. A mere arithmetic multiplier, $1/1 - \Delta C/\Delta Y$ is tautological."

2. Timeless Analysis:

Keynes's logical theory of the multiplier is an instantaneous process without time lag. It is a timeless static equilibrium analysis in which the total effect of a change in investment on income is instantaneous so that consumption goods are produced simultaneously and consumption expenditure is also incurred instantaneously.

But this is not borne out by facts because a time lag is always involved between the receipt of income and its expenditure on consumption goods and also in producing consumption goods. Thus "the timeless multiplier analysis disregards the transition and deals only with the new equilibrium income level" and is therefore unrealistic.

3. Worthless Theoretical Toy:

According to Hazlitt, the Keynesian multiplier "is a strange concept about which some Keynesians make more fuss than about anything else in the Keynesian system." It is a myth for there can never by any precise, predeterminable or mechanical relationship between investment and income. Thus he regards it as "a worthless theoretical toy."

4. Acceleration Effect Ignored:

One of the weaknesses of the multiplier theory is that it studies the effects of investment on income through changes in consumption expenditure. But it ignores the effect of consumption on investment which is known as the acceleration principle. Hicks, Samuelson and others have shown that it is the interaction of the multiplier and the accelerator which helps in controlling business fluctuations.

5. MPC does not Remain Constant:

Gordon points out that the greatest weakness of the multiplier concept is its exclusive emphasis on consumption. He favours the use of the term 'marginal propensity to spend' in place of marginal propensity to consume to make this concept more realistic.

He also objects to the constancy of the marginal propensity to spend (or consume) because in a dynamic economy, it is not likely to remain constant. If it is assumed to be constant, it is not possible "to predict with much accuracy the multiplying effects over the cycle of a given increase in private investment or public spending."

6. Relation between Consumption and Income:

Keynes's multiplier theory establishes a linear relation between consumption and income with the hypothesis that the MPC is less than one and greater than zero. Empirical studies of the behaviour of consumption in relation to income show that the relationship between the two is complicated and non-linear.

As pointed out by Gardner Ackley, "The relationship does not run simply from current income to current consumption, but rather involves some complex average of past and expected income and consumption. There are other factors than income to consider."

Other economists have not been lagging behind in their criticism of the multiplier concept. Prof. Hart considers it "a useless fifth wheel." To Stigler, it is the fuzziest part of Keynes's theory. Prof. Hutt calls it a "rubbish apparatus" which should be expunged from text books.

But despite its scathing criticism, the multiplier principle has considerable practical applicability to economic problems as given below.

Importance of Multiplier:
The concept of multiplier is one of the important contributions of Keynes's to the income and employment theory. As aptly observed by Richard Goodwin "Lord Keynes did not discover the multiplier; that honour goes to Mr. R.F. Kahn. But he gave it the role it plays today by transforming it from an instrument for the analysis of road building into one for the analysis of income building….It set a fresh wind blowing through the structure of economic thought."

Its importance lies in the following:

1. Investment:

The multiplier theory highlights the importance of investment in income and employment theory. Since the consumption function is stable during the short-run fluctuations in income and employment are due to fluctuations in the rate of investment.

A fall in investment leads to a cumulative decline in income and employment by the multiplier process and vice versa. Thus it underlines the importance of investment and explains the process of income propagation.

2. Trade Cycle:

As a corollary to the above, when there are fluctuations in the level of income and employment due to variations in the rate of investment, the multiplier process throws a spotlight on the different phases of the trade cycle.

When there is a fall in investment, income and employment decline in a cumulative manner leading to recession and ultimately to depression. On the contrary, an increase in investment leads to revival and, if this process continues, to a boom. Thus the multiplier is regarded as an indispensable tool in trade cycles.

3. Saving-Investment Equality:

It also helps in bringing the equality between saving and investment. If there is a divergence between saving and investment, and increase in investment leads to a rise in income via the multiplier process by more than the increase in initial investment. As a result of the increase in income, saving also increases and equals investment.
4. Formulation of Economic Policies:

The multiplier is an important tool in the hands of modern states in formulating economic policies. Thus this principle pre-supposes state intervention in economic affairs.

(a) To achieve full employment:

The state decides upon the amount of investment to be injected into the economy to remove unemployment and achieve full employment. An initial increase in investment leads to the rise in income and employment by the multiplier time the increase in investment. If a single dose of investment is insufficient to bring full employment, the state can inject regular doses of investment for this purpose till the full employment level is reached.

(b) To control trade cycles:

The state can control booms and depressions in a trade cycle on the basis of the multiplier effect on income and employment. When the economy is experiencing inflationary pressures, the state can control them by a reduction in investment which leads to a cumulative decline in income and employment via the multiplier process. On the other hand, in a deflationary situation, an increase in investment can help increase the level of income and employment through the multiplier process.

(c) Deficit financing:

The multiplier principle highlights the importance of deficit budgeting. In a state of depression, cheap money policy of lowering the rate of interest is not helpful because the marginal efficiency of capital is so low that a low rate of interest fails to encourage private investment.

In such a situation, increased public expenditure through public investment programmes by creating a budget deficit helps in increasing income and employment by multiplier time the increase in investment.

(d) Public investment:

The above discussion reveals the importance of the multiplier in public investment policy. Public investment refers to the state expenditure on public works and other works meant to increase public welfare. It is autonomous and is free from profit motive.

It, therefore, applies with greater force in overcoming inflationary and deflationary pressures in the economy, and in achieving and maintaining full employment. Private investment being induced by profit motive can help only when the public investment has created a favourable situation for the former.

Moreover, economic activity cannot be left to the vagaries and uncertainties of private enterprise. Hence, the importance of multiplier in public investment lies in creating or controlling income and employment. The state can have the greatest multiplier effect on income and employment by increasing public investment during a depression where the MPC is high (or the MPS is low).

On the contrary, in periods of overfull employment, a decline in investment will have a serious effect on the levels of income and employment where the MPS is high (or MPC is low). The best policy is to reduce investment where the MPC is low (or MPS is high), to have gradual decline in income and employment.

The important thing, however, is the timing of public investment in such a manner that the multiplier is able to work with full force and there is little scope for the income stream to peter out. Moreover, public investment should not supplant but supplement private investment so that it could be increased during depression and reduced during inflation. As a result, the forward and backward operation of the multiplier will help in the two situations.

2. The Dynamic or Period Multiplier:

Keynes's logical theory of the multiplier is an instantaneous process without time lags. It is a timeless static equilibrium analysis in which the total effect of a change in investment on income is instantaneous so that consumption goods are produced simultaneously and consumption expenditure is also incurred instantaneously.

But this is not borne out by facts because a time lag is always involved between the receipt of income and its expenditure on consumption goods and also in producing consumption goods. Thus "the timeless multiplier analysis disregards the transition and deals only with the new equilibrium income level" and is, therefore, unrealistic.

The dynamic multiplier relates to the time lags in the process of income generation. The series of adjustments in income and consumption may take months or even years for the multiplier process to complete, depending upon the assumption made about the period involved.

This is explained in Table III where if each round is of one month and it takes seventeen rounds for an initial investment of Rs 100 crores to generate an income of Rs 200 crores, given the value of MPC to be 0.5, then the multiplier process will take 17 months to complete.

The Table shows that if the MPC remains constant at 0.5 throughout, an initial increase of Rs 100 crores of investment will first raise income by 100 crores in the first month. Out of this Rs 50 crores will be spent on consumption.

This will raise income in the second month to Rs 50 crores, and out of this Rs 25 crores will be spent on consumption. This will go to increase income in the third month by Rs 25 crores, and successive increments in income get smaller and smaller in each period till in the seventeenth month the income increases by Rs 0.001 crore.

This can also be explained algebraically as: (Rs. Crores)

This process of dynamic income propagation assumes that there is a consumption lag and no

investment lag so that consumption is a function of the income of the preceding period i.e., C=f (Yt-1) and investment is a function of time (t) and of constant autonomous investment , ΔI, i.e. I=f (ΔI).

In Figure 3, C + I is the aggregate demand function and the 45° line is the aggregate supply function. If we begin in period t0 where with an equilibrium level of OY0 income, investment is increased by AI, then in period 1 income rises by the amount of the increased investment (from t0 tc t). The increased investment is shown by the new aggregate demand function C + I + ΔI. But in period t0 consumption lags behind, and is still equal to the original income E0.

But at Y0 level total demand rises from Y0t0 to Y0t. There is now an excess of demand over supply equal to t0t. In period t consumption rises due to the rise in demand to Y0t. Now investment increases income still higher to OY1 in period t +1 and to increase in consumption from t to E1.

But at this level, total demand is Y1E1 which exceeds total supply by AE1. This will further tend to raise income to OY in period t+2 and to increase in consumption to E1E2. This leads to a rise in demand to Y2E2, leading to an excess of total demand over total supply by BE2.

This process of income generation will continue till the aggregate demand function C + I + ΔI equals the aggregate supply function 45° line at En in the nth period, and the new equilibrium level of income is determined at OYn. The curved steps E0 to En is the path of income propagation showing the dynamic process of multiplier. The lower portion of the figure shows the time dimension of the multiplier process.

3. The Employment Multiplier:

The concept of Employment Multiplier was introduced by R.F. Kahn in 1931 as a ratio between the total increase in employment and primary employment, i.e. K1 =ΔN/ΔN1 where K1 stands for the employment multiplier, ΔN1 for the increase in total employment and ΔN1 for the increase in primary employment.

Thus the "employment multiplier is a coefficient relating an increment of primary employment on public works to the resulting increment of total employment, primary and secondary combined." To illustrate it, suppose 200000 additional men are employed in public works so that the (secondary) employment is increased by 400000. The total employment is increased by 600000 (=200000 primary + 400000 secondary). The employment multiplier would be 600000/ 200000=3.

Algebraically, the Keynesian multiplier ΔY = KΔI is analogous to Kahn's multiplier ΔN=K1ΔN1. But Keynes points out that there is no reason in general to suppose that K = K1 because income in terms of wage units may rise more than employment, if in the process, nonwage earners' income should rise proportionately more than wage earners' income.

Moreover, with decreasing returns, total product would rise proportionately less than employment. In short, income in terms of wage units would rise most, employment next and output the least. Still, according to Hansen, in the short-run, all three would tend to rise and fall together as envisaged by the Keynesian income and employment theory. He concludes that thus for practical purposes we do no great violence to the facts if we assume that the employment multiplier K1 equals the investment multiplier K.

If, however, output increases towards the full employment output, per unit of labour will fall due to decreasing returns. In such a situation, K1 is larger than K when the multiplier is working to increase output and employment. But K1 is smaller than K if the multiplier is working in the opposite direction.

Dillard points out the employment multiplier are useful for showing the relation between primary and secondary employment from public works. But Keynes' conception is superior to Kahn's because in the words of Goodwin, "He gave it the role it plays today by transforming it from an instrument for the analysis of road building into one for the analysis of income building."

Government budget balance

A balanced budget (particularly that of a government) is a budget in which revenues are equal to

expenditures. Thus, neither a budget deficit nor a budget surplus exists (the accounts "balance"). More generally, it is a budget that has no budget deficit, but could possibly have a budget surplus.[1] A cyclically balanced budget is a budget that is not necessarily balanced year-to-year, but is balanced over the economic cycle, running a surplus in boom years and running a deficit in lean years, with these offsetting over time

Balanced Budget Multiplier (With Diagram)

We have already considered the independent effects of government spending and taxes on national income.

Now we will consider the combined effects of government spending and taxes on national income in the light of balanced budget.

Balanced budget means change in government expenditure is exactly matched by a change in taxes. If government expenditure and tax receipts increase by the same amount, will national income or output increase or remain the same?

Classical economists believed that a balanced budget is neutral in the sense that the levels of output or income remain unchanged. However, Keynes and his followers argued that, in reality, its effect on income will not be zero or neutral. In other words, we can find out the expansionary effect on national income of a balanced budget.

The expansionary effect of a balanced budget is called the balanced budget multiplier (henceforth BBM) or unit multiplier. Here an increase in government spending matched by an increase in taxes results in a net increase in income by the same amount. This is the essence of BBM. This may be illustrated here. Let us assume an MPC of 0.75. If government expenditure increases by Rs. 20 crore national income would increase to Rs. 80 crore.

This can be obtained by using the formula for government spending multiplier, KG:

Now, an increase in taxes by the same amount (i.e. Rs. 20 crore) would lead to a reduction in aggregate output of Rs. 60 crore.

Applying the formula for tax multiplier, KT, we obtain:

This happens because with the increase in taxes of Rs. 20 crore, consumption would decline to Rs. 15 crore and not Rs. 20 crore, since the value of MPC being 0.75. (i.e., 0.75x 20 = Rs. 25 crore). Reduction in consumption by Rs. 15 crore leads to a decline in income by Rs. 60 crore. As a result, the net increase in national income (Rs. 80 – Rs. 60 crore) becomes Rs. 20 crore. Thus, the BBM, defined as the net increase in income (Rs. 20 crore) caused by an increase in government spending (Rs. 20 crore), and increase in taxes (Rs. 20 crore) will have a value of 1. This result is known as the balanced budget theorem or unit multiplier theorem which must have a value of one, no matter whatever the value of MPC.

We can explain BBM in terms of the Fig. 3.20 where C1 is the consumption line before the launching of the tax-expenditure programme. C2 is the post-tax consumption line, DE being the tax receipt. If the entire DE amount of tax receipt is spent by the government, the aggregate demand curve would be represented by C2 + I + G, where investment and government expenditure are assumed to be autonomous.

This curve intersects the 45° line at point F. As a result, national income rises from OA to OB. Note that AB = DE = EF.

Since AB represents the increase in income (ΔY), DE is the increase in tax (ΔT) and EF is the increase in government expenditure (ΔG), we may write:

$\Delta Y = \Delta T = \Delta G$

... $\Delta Y/\Delta G = \Delta Y/\Delta T = 1$

The value of BBM (symbolised by KB) is unity. It can also be expressed in the following way:

Since KG is positive and KT is negative, the net effect of balanced budget is not neutral. Income changes by an amount equal to a change in government expenditure and tax receipt. So the value of BBM must be 1. Since KT is one less than KG, a balanced budget must have a value of one.

However, in reality, the BBM may have a value less than one. In this model, we assumed the uniform MPC for all taxpayers and beneficiaries of government expenditure. However, if MPC of the taxpayers is different from those of the recipients of government expenditure, the value of BBM would be less than unity, but greater than zero. Thus, the BBM must not have value equal to (one) 1 in a complex society (e.g., in the IS-LM model).

The foreign trade multiplier, also known as the export multiplier, operates like the investment multiplier of Keynes. It may be defined as the amount by which the national income of a country will be raised by a unit increase in domestic investment on exports

Foreign Trade Multiplier: Meaning, Working, Assumption, Explanation, Effects and Criticisms!

Meaning:
The foreign trade multiplier, also known as the export multiplier, operates like the investment multiplier of Keynes. It may be defined as the amount by which the national income of a country will be raised by a unit increase in domestic investment on exports.

As exports increase, there is an increase in the income of all persons associated with export industries. These, in turn, create demand for goods. But this is dependent upon their marginal propensity to save (MPS) and the marginal propensity to import (MPM). The smaller these two marginal propensities are, the larger will be the value of the multiplier, and vice versa.

It's working:
The foreign trade multiplier process can be explained like this. Suppose the exports of the country increase. To begin with, the exporters will sell their products to foreign countries and receive more income. In order to meet the foreign demand, they will engage more factors of production to produce more.

This will raise the income of the owners of factors of production. This process will continue and the national income increases by the value of the multiplier. The value of the multiplier depends on the value of MPS and MPM, there being an inverse relation between the two propensities and the export multiplier.

The foreign trade multiplier can be derived algebraically as follows:

The national income identity in an open economy is

$Y = C + I + X – M$

Where Y is national income, C is national consumption, I is total investment, X is exports and M is imports.

The above relationship can be solved as:

$Y-C = 1 + X-M$

or $S = I+X-M$ $(S=Y-C)$

$S + M = I + X$

Thus at equilibrium levels of income the sum of savings and imports (S+M) must equal the sum of investment and export (1+X).

In an open economy the investment component (I) is divided into domestic investment (Id) and foreign investment (If)

I=S

Id + If = S… (1)

Foreign investment (If) is the difference between exports and imports of goods and services.

If =X-M…. (2)

Substituting (2) into (1), we have

ld+ X-M – S

or Id + X = S+M

Which is the equilibrium condition of national income in an open economy. The foreign trade multiplier coefficient (Kf) is equal to

Kf = ΔY/ΔX

And ΔX = ΔS + ΔM

It shows that an increase in exports by Rs. 1000 crores has raised national income through the foreign trade multiplier by Rs. 2000 crores, given the values of MPS and MPM.

It's Assumptions:
The foreign trade multiplier is based on the following assumptions:

1. There is full employment in the domestic economy.

2. There is direct link between domestic and foreign country in exporting and importing goods.

3. The country is small with no foreign repercussion effects.

4. It is on a fixed exchange rate system.

5. The multiplier is based on instantaneous process without time lags.

6. There is no accelerator.

7. There are no tariff barriers and exchange controls.

8. Domestic investment (Id) remains constant.

9. Government expenditure is constant.

10. The analysis is applicable to only two countries.

Diagrammatic Explanation:
Given these assumptions, the equilibrium level in the economy is shown in Figure 1, where S(Y) is the saving function and (S+M) Y is the saving plus import function. ld represents domestic investment and ld + X, domestic investment plus exports. (S+M) Y and Id+ X functions determine the equilibrium level of national income OY at point E, where savings equal domestic investment and exports equal imports.

If there is a shift in the Id + X function due to an increase in exports, the national income will increase

from OY to OY1 as shown in Figure 2. This increase in income is due to the multiplier effect, i.e. $\Delta Y = Kf \Delta X$. The exports will exceed imports by sd, the amount by which savings will exceed domestic investment. The new equilibrium level of income will be OY1. It is a case of positive foreign investment.

If there is a fall in exports, the export function will shift downward to Id + X1 as shown in Figure 3. In this case imports would exceed exports and domestic investment would exceed savings by ds. The level of national income is reduced from OY to OY1. This is the reverse operation of the foreign trade multiplier.

Foreign Repercussion or Backwash Effect:
The above analysis of the simple foreign trade multiplier has been studied in the case of one small country. But, in reality, countries are linked to each other indirectly also. A country's exports or imports affect the national income of the other country which, in turn, affects the foreign trade and national income of the first country.

This is known as the Foreign Repercussion or Backwash or Feedback Effect. The smaller the country is in relation to other trading partner, the negligible is the foreign repercussion. But the foreign repercussion will be high in the case of a large country because a change in the national income of such a country will have significant foreign repercussions or backwash effects.

Assuming two large countries A and B where A's imports are B's exports and vice versa. An increase in A's domestic investment will cause a multiplier increase in its income. This will increase its imports. This increase in A's imports will be increase in B's exports which will increase income in B through B's foreign trade multiplier.

Now the increase in B's income will bring an increase in its imports from country A which will induce a second round increase in A's income, and so on. This is explained in Table 1. When autonomous domestic investment (Id) increases in country A, its national income increase (+Y).

It induces country A to import more from country B. This increases the demand for country B's exports (X+). Consequently, the national income in country B increases (Y+). Now this country imports more (M+) from country A.

As the demand for country A's exports increases (+X), its national income (+Y) increases further and this country imports more (+M) from B country. This process will continue in smaller rounds. These are the foreign repercussions or the backwash effects for country A which will peter out and dampen the effects of increase in the original autonomous domestic investment (Id) in country A.

The stages of foreign repercussions shown in the above table are explained in Figure 4 Panel I, II and III. In stage I, domestic investment in country A increases form Id to Id1 in Panel I. This leads to an upward shift in the Id+ X curve to Id1 + X. As a result, the new equilibrium point is at E1 which shows an increase in the national income from OY to OY1. As the national income increases, the demand for imports from country B also increases.

This means increase in the exports of country B. This is shown in Panel II when the ld + X curve of country B shifts upward as Id + X1. Consequently, the national income in country B increases from OY0 to OY' at the higher equilibrium level E'.

As country B's income increases, its demand for imports from country A also increases. This, in turn, leads to the backwash effect in the form of increase in the demand for exports of country A. This is shown in Panel III where the ld1 + X curve (of Panel I) further shifts upwards to Id1 + X1 and consequently the national income increases further from OY1 to OY2.

This shows how the foreign repercussions in one country affect its own national income and that of the other country which, in turn, again affects in own national income through the backwash effects with greater force.

Implications of Foreign Repercussion:
The following are the implications of foreign repercussion effects:

1. The foreign repercussion effects suggest a mechanism for the transmission of income disturbances between trading countries. If a country is small, it will be affected by change in income of other countries that will alter the demand for its exports. But it will not be able to transmit its own income disturbances to the latter.

If a country is large, it may transmit its own income disturbances to other countries and, in turn, be affected by income disturbances in them. It implies that a boom or slump in one country has repercussion on the incomes of other countries. Thus swings in business cycles are likely to be internationally contagious, as happened in the 1930s and 2008.

2. The repercussion effects also suggest that since the backwash effects ultimately peter out, automatic income changes cannot eliminate completely the current account BOP deficit or surplus produced by an automatic disturbance.

3. The policy implications of the backwash effects suggest that export promotion policies raise national income in the trading partners at a lower rate than by an increase in domestic investment. The export promotion measures raise national income via the simple foreign trade multiplier, whereas increase in domestic investment policies raise national income many times in multiplier rounds via the repercussion effects.

Criticisms of Foreign Trade Multiplier:
The two models of the foreign trade multiplier presented above are based on certain assumptions which make the analysis unrealistic.

1. Exports and Investment not Independent:

The analysis of simple foreign trade multiplier is based on the assumption that exports and investment (both domestic and foreign) are independent of changes in the level of national income. But, in reality, this is not so. A rise in exports does not always lead to increase in national income. On the contrary, certain imports, of say capital goods, have the effect of increasing national income.

2. Legless Analysis:

The foreign trade multiplier is assumed to be an instantaneous process whereby it provides the final results. Thus it involves no lags and is unrealistic.

3. Full Employment not Realistic:

The analysis is based on the assumption of a fully employed economy. But there is less than full employment in every economy. Thus the foreign trade multiplier does not find clear expression in an economy with less than full employment.

4. Not Applicable to More than two Countries:

The whole analysis is applicable to a two-country model. If there are more than two countries, it becomes complicated to analyse and interpret the foreign repercussions of this theory.

5. Neglects Trade Restrictions:

The foreign trade multiplier assumes that there are no tariff barriers and exchange controls. In reality, such trade restrictions exist which restrict the operations of the foreign trade multiplier.

6. Neglects Monetary-Fiscal Measures:

This analysis is based on the unrealistic assumption that the government expenditure is constant. But governments always interfere through monetary and fiscal policies which affect exports, imports and national income. Despite these shortcomings, the foreign trade multiplier is a powerful tool of economic analysis which helps in formulating policy measures.

Acceleration : The acceleration principle is an economic concept that draws a connection between changing consumption patterns and capital investment. It states that if appetite for consumer goods increases, demand for equipment and other investments necessary to make these goods will grow even more

What Is the Acceleration Principle?
The acceleration principle is an economic concept that draws a connection between changing consumption patterns and capital investment. It states that if appetite for consumer goods increases, demand for equipment and other investments necessary to make these goods will grow even more. In other words, if a population's income increases and its residents, as a result, begin to consume more, there will be a corresponding but magnified change in investment.

The acceleration principle is also referred to as the accelerator principle or the accelerator effect.

Understanding the Acceleration Principle
Companies frequently seek to gauge how much demand there is for their products or services. If they notice that economic conditions are improving and consumption is growing at a sustainable rate, they will likely invest to increase their output, particularly if they are already running close to full capacity. Failure to do so could see them miss out on a chunk of potential future revenues and lose ground to faster-responding competitors.

According to the acceleration principle, capital investment increases at a faster rate than demand for a product. That is because investments to boost output often require significant outlays.

Economies of scale determine that investments are generally more efficient and come with greater cost advantages when they are significant. In other words, it makes more sense financially to increase capacity substantially, rather than just by a little bit.

The acceleration principle does not compute the rate of change in capital investment as a product of the overall level of consumption, but as a product of the rate of change in the level of consumption.
Special Considerations
The acceleration principle has the effect of exaggerating booms and recessions in the economy. This makes sense, as companies want to optimize their profits when they have a successful product, investing in more factories and capital investments to produce more.

Several economists, including Irving Fisher, note that economic cycles move in tandem with company attempts to match ever-changing consumer demand. When the economy is growing, customers are buying and low interest rates make it cheaper to borrow, management teams regularly seek to capitalize by ramping up production.

Eventually, this inevitably leads to there being too many products and services in the market. When supply outstrips demand prices fall, prompting companies, faced with plummeting sales and profits, to scramble to keep their costs under control. Often, they respond by slashing capital expenditure (CapEx) and laying off staff.

Read this article to learn about the meaning, working and operation of acceleration principle in economics.

Meaning:
The multiplier and accelerator are not rivals but parallel concepts. While the multiplier shows the effect of investment on consumption (and employment), the accelerator shows the effect of a change in consumption on investment.

Hayek explains the central idea of the principle in these words: “Since the production of any given amount of final output usually requires an amount of capital several times larger than the output produced with it during any short period (say a year) any increase in final demand will give rise to an additional demand for capital goods several times larger than the new final demand.”

The principle of acceleration states that if demand for consumption goods rises, there will be an increase in the demand for factor of production, say machine, which goes to produce the goods.

But the demand for machines will increase at a faster rate than the demand for the product. The accelerator, therefore, makes the level of investment a function of the rate of change in consumption and not of the level of consumption.

In other words, the accelerator measures the changes in investment goods industries as a result of changes in consumption goods industries, The idea underlying the accelerator is not so much one or ever rising demand as of a functional relationship between the demand for consumption goods and the demand for the machines which make them. The acceleration coefficient is the ratio between the induced investments to a net change in consumption expenditures.

Symbolically $\alpha = \Delta I/\Delta C$, where a stands for acceleration coefficient; ΔI denotes the net changes in investment outlays; and ΔC denotes the net change in consumption outlays. Suppose an expenditure of Rs. 10 crore on consumption goods leads to an investment of Rs. 20 crore in investment industries, then the accelerator is 2.

It could be one or even less than that. In actual practice, however, increased expenditures on consumption goods always lead to increased expenditures on capital goods. Hence acceleration is usually more than zero. Where a good deal of capital equipment is needed per unit of output, acceleration coefficient is positive and more than unity.

Sometimes, it so happens that the production of increased consumer goods (as a result of a rise in their demand) does not lead to an increase in the capital equipment producing these goods. The existing machinery also wears out on account of the constant use, with the result that the increased demand for consumer goods cannot be met.

It actually happened in India and Turkey during the Second World War. In the absence of induced investment and acceleration effects, the increased demand of consumption goods leveled off and the accelerator, which measures the effects of induced investment (in investment goods industries) as a result of changes in consumption, did not seem to work during all these years. The factual basis of the acceleration principle is the knowledge that the fluctuations in output and employment in investment goods industries are greater than in consumption goods industries.

Acceleration has greater applicability to the industrial sector of the economy and as such it seeks to analyse the problem as to why fluctuations in employment in the capital goods industries are more violent than those in the consumption goods industries. There would be no acceleration effects in an economy that used no capital goods. But that is very rare. The more capitalized the methods of production are, the greater must be the value of the accelerator.

As the nature of acceleration is, it has been widely used to explain fluctuations in economic activity, especially in the investment goods industries. Nevertheless, the accelerator cannot and does not claim to be able to explain all kinds of fluctuations in investment goods industries. For example, the prices of raw materials sometimes fluctuate more violently than the prices of investment goods because the supply of raw materials, especially agricultural commodities, is much more inelastic in response to the changes in demand than is the supply of manufactured goods.

Multiplier and Accelerator Distinguished:
For a clear grasp of the concept of accelerator, it is useful to distinguish between multiplier and accelerator as the two concepts are likely to be confused. Multiplier shows the effect of the change in investment on income and employment and the accelerator shows the effect of a change in consumption on investment. In other words, in the case of multiplier, the consumption is dependent upon investment, whereas in the case of accelerator investment is dependent upon consumption. Further, multiplier depends upon the propensity to consume and the accelerator depends upon durability of the machines.

In other words, the former is dependent upon psychological factors, while the latter is dependent upon technological factors. However, even accelerator is psychological in its origin and content but becomes highly technical on operational plane. The accelerator shows the action (effects) of growth of

consumption on investment and the multiplier shows the reaction of consumption to increased investment.

Its Working and Operation:

In case I in the above table, we find that we need 100 machines to produce 1000 consumer goods (capital output ratio being 1:10). Further we presume that the life of the machine (durability) is 10 years. Thus, after 10 years, the machine has to be replaced and 10 machines have to be replaced in each period in order to maintain a flow of 1000 consumer goods. This is called 'Replacement Demand'. Now suppose there is 10 per cent rise in the demand for consumer goods in period I (as shown in case I), the change in consumption will be 1100 goods and we will need 110 machines to produce these goods (at the constant capital-output ratio of 1: 10).

Thus, we need 20 machines in all, 10 machines being addition to the total stock of capital and 10 machines for replacement. Thus, a 10 per cent rise in the demand for capital goods leads to a 100 per cent rise in the demand for investment goods (machines). This is what the principle of acceleration tends to show, i.e., it shows that a small increase in consumption is likely to result in manifold increase in investment (called induced investment).

Now in case II, when the life of the machine is 20 years, a 10 per cent rise in the demand for consumer goods in the first period leads to 200 per cent increase in gross investment. Further, in case III, when the life of the machine is 5 years, a 10 per cent rise in the demand for consumer goods Results merely in an increase of 50 per cent in the gross investment. It is, therefore, clear the greater the durability (life) of the machine, the greater the value of the accelerator and higher the acceleration effects; and smaller the durability, lower the value of the accelerator and lower are the acceleration effects.

In case IV, where we presume the life of the machine to be 10 years and capital-output ratio constant at 1: 10 (i.e., we need 100 machines to produce 1000 goods), we find that a 10 per cent rise in period I, in consumption goods, leads to 100 per cent increase in gross investment, whereas in period II, when the demand for consumer goods does not rise and remains constant at 1000, there is a decline of 50 per cent in gross investment.

Thus, we find that even, when there is no decrease in the demand for consumer goods, there is likely to be a decline in gross investment. It is to be noted that it is the falling off in the rate of increase in consumption and not a decline in the absolute level of consumption which causes the contraction in the demand for machines.

Further, in case V, presuming the life of the machine to be 10 years, we find that we need 110 machines to produce 1000 consumer goods. But when there is a fall in the demand for consumer goods to the extent of 10 per cent in period I, we need 90 machines to produce 900 goods, there is 100 per cent fall in the gross investment (with only 10 per cent fall in the demand for consumer goods).

If, however, the demand for consumer goods falls by 20 per cent, we will need 20 per cent less machines and correspondingly we can expect the rate of investment to fall by 200 per cent. But at the most what the producers can do is to produce no machines at all i.e., not to replace existing machines.

They may allow some of the existing plants and equipment to lie idle. Thus, when the economy is moving downwards, the fall in investment becomes confined to the demand for replacement and can at the most fall to zero. In other words, the value of the accelerator during downward swing is limited by the inability of the demand for investment goods to fall below the value of replacement (depreciation) demand, i.e., a decline in investment resulting from a decline in the demand for consumption goods – cannot exceed depreciation.

A decline in consumption which is in excess of depreciation figure simply gives rise to excess idle capacity. The so-called 'accelerator' (demand for capital goods) is a highly dangerous tool, for it depends upon the change in the rate of consumption, which, in turn, depends upon highly capricious investment in the short period, at any rate. Therefore, as long as the basic conditions (technological and structural) favouring investment prevail, the acceleration principle serves as an inducement to invest.

Thus, the acceleration principle holds that investment demand is dependent on increases in output,

because such increases put pressures on firms to expand their stocks of capital goods. According to the accelerator theory, investment occurs to enlarge the stock of capital because more capital is needed to produce more output. It is, no doubt, true that within limits, firms may be able to produce more output with existing capital through more intensive use, but there is, at any time, a particular ratio of capital to output (capital-output ratio) that firms consider optimum.

This ratio varies considerably from firm to firm and from industry to industry—much more capital is used per dollar of output in the car industry than in the tailoring industry. At any time, there is a particular ratio that is the desired ratio for the economy as a whole over time, this ratio will change as the mix of output changes—more cars and less clothes or vice-versa. In order to reduce the complication it is assumed that this ratio (capital-output) remains unchanged or constant over time.

With K representing the capital stock, Y the level of output and w the capital-output ratio, we have:

$K = wY$

If the C/O is 2, then K of Rs. 400 is desired for Y of Rs. 200 and K of Rs. 450 for Y of Rs. 225. Since C/O is constant over time. K (the desired stock of capital) will change over successive time periods only with changes in output (Y). Denoting a particular time period by t, preceding time periods are t – 1 ant t – 2 and future of subsequent time periods are t + 1 and t + 2. Assume that in the preceding period (t – 1) the desired capital stock was enough to produce the level of output of the period t – 1. That is:

$Kt - 1 = wYt\text{-}1$

If output rise from Yt–1 to Yt, the desired capital stock would also rise from Kt–1 to Kt that is:

$Kt = wYt$

This increase in the desired stock of capital is Kt – Kt- 1. To get this increase in capital stock, additional net investment is needed—this net increase in net investment expenditure is equal to the change in capital stock, that is:

$It = Kt\ K\ t\text{-}1$ …(i)

where I1 is net investment in period t. By substituting wYt for Kt and wY t-1 for Kt–1, we get

$It, = wYt - wY\ t\text{-}1 = w(Yt - Y\ t\text{-}1)$…(i)

This equation simply means that investment during a particular time period (t) depends on the changes in output from t-1 to t multiplied by capital-output ratio (w). If Yt >Y t-1 the equation shows that there is positive net investment during the period t—if Yt < Yt–1, there is negative net investment, or disinvestment during period t. If, however, we want to show gross rather than net investment, all that is needed is to add replacement investment to both sides of the equation. This replacement investment is taken to be equal to depreciation and is shown by Dt, we have thus:

$It + Dt = w(Yt - Y\ t\text{-}1) + Dt$

But as has been shown in case V in the above table the negative net investment in plant and equipment is limited to the amount of depreciation of the capital stock, the sum of It and Dt cannot be less than zero. If Igt represents gross investment in period t. we have:

$Igt = w(Yt - Y\ t\text{-}1) + Dt$ …(iii)

Investment will respond to changes in the level of output shown by the equation only if certain assumptions are satisfied, the most important being the absence of excess capacity, if X, shows the excess capacity at the beginning of the period t, we may rewrite equation (iii) as:

$Igt = w\ (Yt - Yt\text{-}1) + Dt - Xt$

Whatever the level of gross investment might otherwise be in period t, it will be reduced by the amount

of Xt. If the value of w(Yt – Y t-1)+Dt, happened to be equal to or less than Xt—then Igt, would be zero—the minimum possible for gross investment in plant and equipment as elaborated by case V in the table already given.

The sets of equations just developed in support of the illustrative cases I to V in the table already given are significant, at least for two reasons:

Firstly, they indicate the causal relationship between changes in output and investment spending.

Secondly, they point out to the fact that the investment spending resulting from a change in output is likely to be larger than the changes in output that caused it.

This will be true in every case where w is higher than one—that is, where the amount of capital needed to produce a given output is larger than the value of the output. This lies at the heart of the acceleration principle.

Super multiplier:
The super multiplier combines the multiplier with the accelerator that indicates that investment is not only autonomous, but is part of derived demand. } Hence, the super multiplier indicates that capacity adjusted output is determined by autonomous demand

The term multiplier is usually used in reference to the relationship between government spending and total national income. Multipliers are also used in explaining fractional reserve banking, known as the deposit multiplier

the interaction between multiplier and accelerator in business cycle.

We have examined the working of the Multiplier and Acceleration principles separately.

The principle of acceleration has attained more importance in cyclical theory by its alliance with the multiplier principle.

The interaction of the accelerator with the multiplier is capable, under certain circumstances, of generating continuous cyclical fluctuations.

Economists like P.A. Samuelson, J.R. Hicks, R.F. Harrod and A. Hansen have made fairly successful attempts to integrate the two parallel concepts and have introduced certain remarkable improvements. Neither the multiplier nor the accelerator taken alone can act. In fact, the two tools combine in a series of endless possibilities, depending on the values of the accelerator and the magnitude of the multiplier. In other words, the relationship can be expressed as follows:

$\Delta Ia \rightarrow$ (multiplier) $\rightarrow \Delta Y \rightarrow$ (accelerator) $\rightarrow \Delta Ib \rightarrow$ (K) $\rightarrow \Delta Y \rightarrow \ldots$

where an initial increase in autonomous investment (Ia) works through the multiplier to cause an increase in income (ΔY), and this works through the accelerator to cause a greater change in induced investment (lb), which, in turn, increases income still more and so the action and the interaction continue. The process is super-cumulative because one initial increase (or decrease) will set off a snowball effect where income and investment interact to magnify the impact at each successive level.

It is, therefore, quite interesting and useful to analyze the combined effects of multiplier and accelerator on national income propagation. In order to measure the total effects of initial expenditure on national income, we must combine the acceleration and multiplier principles, popularly called the ‘leverage effects’. The combined effects of autonomous and induced investment are expressed in what Hansen calls the ‘Super-Multiplier’.

Multiplier and Acceleration Effects of Income:

Assumptions:

(i) Marginal Propensity to consume = ½=0.5

(ii) Acceleration coefficient= 2

In the table given above, we can easily see the process of income propagation via the multiplier and acceleration principles, we assume (i) MPC = ½ (ii) Acceleration coefficient = 2. In the first period there is an initial outlay of Rs. 10 crore, which does not lead to any induced investment. Hence, the total rise in national income in the first period is Rs. 10 crore (being equal to initial outlay of Rs. 10 crore).

Since the MPC = ½, therefore, the induced consumption in the second period is Rs. 5 crore (shown in the column 3) and acceleration coefficient being 2, the induced investment in the second period is Rs. 10 crore, (shown in column 4) and the total leverage effects (total increase in national income) is Rs. 25 crore (shown in column 5). Similarly, in the third period, we get induced consumption of Rs. 12.50 crore and induced net investment of Rs. 15 crore being twice the difference between 12.50 crore and 5 crore (shown in column 3).

Thus, total income in the fourth period has reached the peak level of Rs. 41.25 crore, as a result of the combined multiplier and acceleration interaction (called Super-Multiplier). Then, in the fifth period, the total income starts falling and falls to rock bottom level of – 1.15 crore in 8th period and then again starts rising from 15.52 crore to 32.12 crore and goes upto 42.66 crore in the 11th period, thereby completing a cycle. The result is quite a moderate type recurring cycle which repeats itself indefinitely.

This shows that mpc of less than unity gives an answer to the question: Why does the cumulative process come to an end before a complete collapse or before full employment? Hansen says that the rise in income progressively slowed down on account of a large part if the increase in income in each successive period is not spent on consumption. This results in a decline in the volume of induced investment and when such a decline exceeds the increase in induced consumption, a decline in income sets in.

“Thus, it is the marginal propensity to save which calls a halt to the expansion process even when the expansion is intensified by the process of acceleration on top of the multiplier process.” However, we have assumed constant values of multiplier and acceleration coefficients but in a dynamic economy they vary cyclically. Thus, when we study the results of leverage effects or the interaction of multiplier and acceleration coefficients, we find that the level of income will be subject to various types of fluctuations depending on the values of acceleration and the multiplier.

In the Fig. 42.1, we measure time periods on the horizontal axis and the increase in income on the vertical axis. The curve a to b and b to c shows the ordinary process of income propagation (total leverage effects) as a result of multiplier and accelerator interaction during 5 periods.

The income rises to its peak up to Rs. 41.25 crore (from a to b). This is because the rate of increase of induced consumption goes on g 40 – increasing from period 1 to 4, acceleration effects work g in conjunction with the multiplier to push up the level of income. However, income falls in the period 5 from b to c since the rate of increase in induced consumption 2 falls. But income and investment will not keep on going higher and higher indefinitely because two forces work to cause an eventual leveling off.

Firstly, the mps and other leakages like taxes reduce the rate of growth of consumption at each stage until the consumption finally ceases to increase at all. Secondly, the initial increase in an autonomous investment soon exhausts itself, because as the capital stock grows during expansion, the MEC is likely to fall till investment is no longer profitable. Thus, while the interaction of the multiplier and accelerators magnifies economic expansion, it also acts to set its own limits through the eventual reduction of consumption and autonomous investment.

General equilibrium:

This condition is the equilibrium condition in the capital market as also the equilibrium condition in the goods market. ... Therefore, the Hicks-Hansen IS-LM theory is able to determine a unique equilibrium rate of interest along with a unique equilibrium level of income

Classical Interest Theory and the IS Curve:
The equations of the classical theory of interest are:

$s = s(r), s' > 0$ [eq. (17.1)]

$i = i(r), i' < 0$ [eq. (17.2)]

and $s(r) = i(r)$ [eq. (17.3)]

where the meanings of the symbols are already known to us.

The equilibrium values of r, s and i that can be obtained by solving these three equations may also be obtained from Fig. 17.9 which is the same as Fig. 17.1. These values are, respectively, r0, s0 and i0.

It has been assumed in this theory that saving (s) is a function of the rate of interest (r) only.

However, according to Keynes, apart from r, saving is also an increasing function of income (y). Therefore, following Keynes, we have

$s = s(r, y); \partial s/\partial r > 0, \partial s/\partial y > 0$ [eq. (17.4)].

However, Keynes did not carry this idea to its logical conclusion. He only used it to argue that the classical theory was indeterminate. It was left to Hicks and Hansen to work further on this idea. They said that eqn. (17.4) was not an s curve only. It was a family of s curves.

According to them, since $s = s(r, y)$, the position of the s (r) curve depends on the value of y. For each particular value of y, we have a separate s(r) curve. For $y = y1, y2, y3$, etc. (…. $y3 > y2 > y1$), the s curves in (r, s) space that we would obtain are $s(r, y1)$, $s(r, y2)$, $s(r, y3)$, etc.

These curves have been shown in Fig. 17.10. Since $y2 > y1$ and s is an increasing function of y, we would have at any r, $s(r, y2) > s(r, y1)$, i.e., the $s(r, y2)$ curve lies to the right of the $s(r, y1)$ curve. Similarly, since $y3 > y2$, the curve $s(r, y3)$ would lie to the right of the curve $s(r, y2)$. In other words, as y rises, the $s(r, y)$ curve would shift to the right.

If we now superimpose the i(r) curve on the family of s(r) curves in Fig. 17.10, we would get not a unique equilibrium value of r, but a number of such values one for each $s(r, y)$ curve at the point of intersection of this curve with the i(r) curve. This gives us the indeterminacy of the classical theory. In Fig. 17.10, we see that, if $y = y1$, the equilibrium r would be r1 at the point of intersection of the $s(r, y1)$ and i(r) curves.

Similarly, if $y = y2$ or $y3$, the equilibrium values of r would be r2 or r3. That is, here we do not obtain any unique value of r; rather, we get different (r, y) combinations, viz., (r1, y1), (r2, y2), (r3, y3), etc. Let us now plot these combinations as points in the (r, y) space of a separate diagram, in Fig. 17.11. Now, the curve that is obtained by joining these points is known as the Hicks-Hansen IS curve. In Fig. 17.11

We have obtained the IS curve corresponding to the (r, y) equilibrium combinations of Fig. 17.10. At each point or (r, y) combination on the IS curve we have $i(r) = s(r, y)$. That is why the curve is called an IS curve, and that is why the equation of the curve is

$s(r, y) = i(r)$ (17.14)

Since (17.14) is an equation in two unknowns, viz., rand y, it cannot be uniquely solved for either r or y; rather, we would obtain different (r, y) combinations as its solution. Let us also note that there is a one-to-one correspondence between the equilibrium points, viz., E1, E2, E3, etc. in Fig. 17.10 and the points on the IS curve, viz., F1, F2, F3, etc., respectively, in Fig. 17.11.

The Slope of the IS Curve:

The slope of the IS curve would be negative, i.e., it would be sloping downward towards right. This is because, as we see in Fig. 17.10, as y increases from y2 to y3 at any i = s point, E2, the s(r, y) curve shifts to the right, from s(r, y2) to s(r, y3) and the point of intersection between the s and i curves moves downward towards right along the i(r) curve from E2 to E3 giving us a lower r, viz., r3.

From the point of view of economics, we have this to say: As y increases at E2, the s(r, y) curve shifts to the right.

Therefore, at the initial (equilibrium) r = r2, s becomes greater than i(r2T > r2E2). In the competitive capital market r now would be falling till at some rate of interest, s, falling along the new s(r, y) curve from the point T to E3, and i, rising along i(r) curve from the point E2 to E3, would become equal to each other, and the market would come back to equilibrium at a lower r (viz., r3) and a higher y (viz., y3).

Therefore, along the IS curve, in Fig. 17.11, as y rises from y2 to y3, r would fall from r2 to r3, giving us the slope of the curve to be negative. We may also show with the help of calculus that the slope of the IS curve is negative. Taking total differential of (17.14), we have

Liquidity Preference Theory of Keynes and the LM Curve:
The equations of Keynes' liquidity preference theory are

and $L(r) = \bar{m}$ [eqn. (17.13)]

where the meanings of the symbols are already known to us.

As we know, eq. (17.13) is the money market equilibrium condition. If other things, especially, the level of income (y), remain unchanged, then from (17.10), we obtain

$L = L1(\bar{y}) + L2(r) = L(r, \bar{y}) = L(r); \partial L/\partial < 0$ [eqn. (17.11)]

(17.11) is demand for money (L) curve in the liquidity preference theory—here L is a function of r only. The equilibrium rate of interest is one at which the demand for money in real terms (L) becomes equal to the supply of money in real terms (m). Here the supply of money is taken to be an exogenously given constant ($m = \bar{m}$). Therefore, at the equilibrium r, we obtain

$L(r) = \bar{m}$ [eqn (17.13)].

Since there is only one variable, r, in (17.13), we may solve it for a unique value of r as we have done with the help of Fig. 17.6 or 17.12. The value of equilibrium r thus obtained is r = r0 at the point of intersection of the demand for and supply of money curves, $L(r, \bar{y})$ and NS, respectively.

It has been assumed here that L is a function of r only. But Keynes himself argued that the L1 part of L is a function of y. That is why L is an increasing function y also, apart from it being a decreasing function of r owing to its L2 part. All this we have represented in eqn (17.10).

However, Keynes did not carry this idea further. It was Profs. Hicks and Hansen who pointed out that (17.10) was not the equation of an L curve. It actually represented a family of L curves. They argued that since L = L (r, y), the position of the L (r) curve depends on the value of y. For each particular value of y, we have a separate L(r) curve.

For y = y1, y2, y3, etc. (… y3 > y2 > y1), the L curves in (r, L) space that we would obtain are L(r, y1),

L(r, y2), L(r, y3), etc. These curves have been shown in Fig. 17.13. Since y2 > y1, and L is an increasing function of y, we would have, at any r, L(r, y2) > L(r, y1).

That is why the L(r, y2) curve lies to the right of the L(r, y1) curve. Similarly, since y3 > y2, the curve L(r, y3) would lie to the right of the curve L(r, y2). In other words, as y rises, the L(r, y) curve shifts to the right.

Let us now superimpose the supply of money curve NS on the family of L curves in Fig. 17.13. Since the supply of money is assumed to be a constant, viz., $\bar{m}$ = ON, the NS curve would be a vertical straight line. Here we would not get a unique equilibrium value of r, but a number of such values, one for each L(r, y) curve at its point of intersection with the NS curve.

This gives us the indeterminacy of Keynes' liquidity preference theory. In Fig. 17.13, we obtain that the equilibrium r would be r1 at the point of intersection of the L(r, y1) and NS curves. Similarly, if y = y2 or y3, the equilibrium values of r would be r2 or r3. That is, here we do not obtain any unique value of r; rather we get different (r, y) combinations, viz., (r1, y1), (r2, y2), (r3, y3), etc. Let us now plot these combinations as points in the (r, y) space of a separate diagram in Fig. 17.14.

Now, the curve that is obtained by joining these points is known as the Hicks-Hansen LM curve. In Fig. 17.14, we have obtained the LM curve corresponding to the (r, y) equilibrium combinations of Fig. 17.13.

At each point or (r, y) combination on the LM curve, we have L (r, y) = $\bar{m}$. That is why the curve is called an LM curve, L and M standing for demand for money and supply of money (in real terms), and that is why the equation of the LM curve is

$$L(r, y) = m \qquad (17.16)$$

Since (17.16) is an equation in two unknowns, viz., rand y, it cannot be uniquely solved for either r or y; rather, we would obtain different (r, y) combinations as its solution. Let us also note here that there is a one-to-one correspondence between the equilibrium points G1, G2, G3, etc. in Fig. 17.13 and the points on the LM curve, viz., H1, H2, H3, etc., respectively, in Fig. 17.14.

The Slope of the LM Curve:

The slope of the LM curve would be positive corresponding to the negatively sloped segment of the underlying liquidity preference (L) curve. This is because, as we see in Fig. 17.13, as y rises, at any L = M point, G2, from y2 to y3, the L (r, y) curve shifts to the right from L (r, y2) to L(r, y3) and its point of intersection between the L and $\bar{m}$ (here NS) curves, moves vertically upwards along the in curve [vertically, because the $\bar{m}$ (or NS) curve here is a vertical straight line] from G2 to G3, giving us a higher r, viz., r3. That is, r as y rises, r also rises, giving us the positive slope of the LM curve.

As regards the economics behind this, we may say the following. As y increases at G2, the L (r, y) curve shifts to the right. Therefore, at the initial equilibrium r = r2, L becomes greater than $\bar{m}$ (r2V2 > r2G2).

Consequently, people will sell bonds, and this will be followed by a fall in pb and a rise in r. The rise in r will be followed by a fall in L along the higher L curve till, at some r = r3, L would again become equal to m and the money market will come back to equilibrium at a higher r and a higher y.

Since the movement from the point G2 to G3 in Fig. 17.13 is the same as that from H2 to H3 along the LM curve in Fig. 17.14, and the point H3 would have more of y and r than point H2, we obtain that the LM curve is positively sloped. However, we should remember that the positive slope of the LM curve would be obtained if the slope of the L curve is negative.

Of course, apart from the negatively sloped segment, the L curve would also have a vertical and a horizontal segment. We shall now see the LM curve also would be vertical or horizontal as the L curve assumes such shapes. Taking the total differential of (17.16), we have

Lastly, in the intermediate range of the L curve, we have $-\infty < \partial r/\partial L < 0$, or, $-\infty < \partial L/\partial r < 0$. Here we get $\infty > dr/dy|LM > 0$, i.e., here the slope of the LM curve would be positive finite. Therefore, here the LM curve would be sloping upward towards right. This positively sloped segment of the LM curve is called its intermediate range.

Therefore, that like the L curve, the LM curve would also have a horizontal, a vertical and an intermediate range. We have also seen that both the L and the LM curves are horizontal at the same r which is r = rmin, and their vertical segments begin at the same r which is r = r*, and both the curves have their intermediate ranges at $r_{min} \leq r \leq r^*$. All these points are observed in Figs. 17.15(a) and (b).

Determination of the Rate of Interest in Hicks-Hansen Theory:
The IS curve passes through the (r, y) combinations that satisfy the condition s(r, y) = i(r). This condition is the equilibrium condition in the capital market as also the equilibrium condition in the goods market.

On the other hand, the LM curve passes through the (r, y) combinations that satisfy the condition L(r, y) = M (the money supply in real terms), which is the equilibrium condition in the money market. Therefore, the (r, y) combination that would be obtained at the point of intersection of these two curves (IS and LM), would give us simultaneously the equilibrium in the goods market and that in the money market.

In Fig. 17.16, E is the point of intersection of the IS and LM curves. At the point E, we obtain that if the economy's level of income and the rate of interest be y0 and r0, then the goods market and the money market would be in equilibrium simultaneously.

Here the equilibrium in the goods market or equilibrium in the level of income cannot be disturbed by the lack of equilibrium in the money market giving rise to a change in the rate of interest and in the level of investment.

Also, the equilibrium in the money market cannot be disturbed by the disequilibrium in the goods market leading to change in the level of income and the rate of interest.

Therefore, the Hicks-Hansen IS-LM theory is able to determine a unique equilibrium rate of interest (r0 in Fig. 17.16) along with a unique equilibrium level of income (y0 in Fig. 17.16). That is why the IS-LM theory may be considered to be a complete theory of interest rate determination.
the derivation, slope, shift and essential features of LM curve in money market equilibrium.

Derivation of the LM Curve:
The LM curve can be derived from the Keynesian theory from its analysis of money market equilibrium.

According to Keynes, demand for money to hold depends upon transactions motive and speculative motive. It is the money held for transactions motive which is a function of income. The greater the level of income, the greater the amount of money held for transactions motive and therefore higher the level of money demand curve.

The demand for money depends on the level of income because they have to finance their expenditure, that is, their transactions of buying goods and services. The demand for money also depends on the rate of interest which is the cost of holding money. This is because by holding money rather than lending it and buying other financial assets, one has to forgo interest.

Thus demand for money (Md) can be expressed as:

$Md = L(Y, r)$

where Md stands for demand for money, Y for real income and r for rate of interest. Thus, we can draw a family of money demand curves at various levels of income. Now, the intersection of these various money demand curves corresponding to different income levels with the supply curve of money fixed by the monetary authority would gives us the LM curve.

The LM curve relates the level of income with the rate of interest which is determined by money-market equilibrium corresponding to different levels of demand for money. The LM curve tells what the various rates of interest will be (given the quantity of money and the family of demand curves for money) at different levels of income.

But the money demand curve or what Keynes calls the liquidity preference curve alone rises. In Fig. 20.2 (b) we measure income on the X-axis and plot the income level corresponding to the various interest rates determined at those income levels through money market equilibrium by the equality of demand for and the supply of money in Fig. 20.2 (a).

Slope of LM Curve:
It will be noticed from Fig. 20.2 (b) that the LM curve slopes upward to the right. This is because with higher levels of income, demand curve for money (Md) is higher and consequently the money- market equilibrium, that is, the equality of the given money supply with money demand curve occurs at a higher rate of interest. This implies that rate of interest varies directly with income.

It is important to know the factors on which the slope of the LM curve depends. There are two factors on which the slope of the LM curve depends. First, the responsiveness of demand for money (i.e., liquidity preference) to the changes in income. As the income increases, say from Y0 to Y1, the demand curve for money shifts from Md0 to Md1, that is, with an increase in income, demand for money would increase for being held for transactions motive, Md or L1 =f(Y).

This extra demand for money would disturb the money market equilibrium and for the equilibrium to be restored the rate of interest will rise to the level where the given money supply curve intersects the new demand curve corresponding to the higher income level. It is worth noting that in the new equilibrium position, with the given stock of money supply, money held under the transactions motive will increase whereas the money held for speculative motive will decline.

The greater the extent to which demand for money for transactions motive increases with the increase in income, the greater the decline in the supply of money available for speculative motive and, given the demand for money for speculative motive, the higher the rise in the rate of interest and consequently the steeper the LM curve, r = f (M2, L2) where r is the rate of interest, M2 is the stock of money available for speculative motive and L2 is the money demand or liquidity preference function for speculative motive.

The second factor which determines the slope of the LM curve is the elasticity or responsiveness of demand for money (i.e., liquidity preference for speculative motive) to the changes in rate of interest. The lower the elasticity of liquidity preference for speculative motive with respect to the changes in the rate of interest, the steeper will be the LM curve. On the other hand, if the elasticity of liquidity preference (money demand function) to the changes in the rate of interest is high, the LM curve will be flatter or less steep.

Shifts in the LM Curve:
Another important thing to know about the IS-LM curve model is that what brings about shifts in the LM curve or, in other words, what determines the position of the LM curve. A LM curve is drawn by keeping the stock or money supply fixed. Therefore, when the money supply increases, given the money demand function, it will lower the rate of interest at the given level of income.

This is because with income fixed, the rate of interest must fall so that demand for money for speculative and transactions motive rises to become equal to the greater money supply. This will cause the LM curve to shift outward to the right.

The other factor which causes a shift in the LM curve is the change in liquidity preference (money demand function) for a given level of income. If the liquidity preference function for a given level of income shifts upward, this, given the stock of money, will lead to the rise in the rate of interest for a given level of income. This will bring about a shift in the LM curve to the left.

It therefore follows from above that increase in the money demand function causes the LM curve to shift to the left. Similarly, on the contrary, if the money demand function for a given level of income declines, it will lower the rate of interest for a given level of income and will therefore shift the LM

curve to the right.

Essential Features:
From our analysis of the LM curve, we arrive at its following essential features:

1. The LM curve is a schedule that describes the combinations of rate of interest and level of income at which money market is in equilibrium.

2. The LM curve slopes upward to the right.

3. The LM curve is flatter if the interest elasticity of demand for money is high. On the contrary, the LM curve is steep if the interest elasticity demand for money is low.

4. The LM curve shifts to the right when the stock of money supply is increased and it shifts to the left if the stock of money supply is reduced.

5. The LM curve shifts to the left if there is an increase in the money demand function which raises the quantity of money demanded at the given interest rate and income level. On the other hand, the LM curve shifts to the right if there is a decrease in the money demand function which lowers the amount of money demanded at given levels of interest rate and income.

Derivation of the IS curve
Reading: AB, chapter 10, section 2.

The IS curve represents all combinations of income (Y) and the real interest rate (r) such that the market for goods and services is in equilibrium. That is, every point on the IS curve is an income/real interest rate pair (Y,r) such that the demand for goods is equal to the supply of goods (where it is implicitly assumed that whatever is demanded is supplied) or, equivalently, desired national saving is equal to desired investment. The graphical derivation of the IS curve is given below.

Consider an initial equilibrium in the goods market where r = 5% and income is equal to Y0. This equilibrium is illustrated in the graph on the right with r on the vertical axis and Y on the horizontal axis as the big black dot (middle dot). Now suppose Y increases to Y1 (say supply increases). This increase in Y shifts the desired savings curve down and right lowering the equilibrium real interest rate to 3%. The new equilibrium in the goods market with higher income and a lower real interest rate is illustrated in the graph on the right as the big blue dot (bottom dot). Similarly, if Y decreases from Y0 to Y2 then the savings curve shifts up and left and the equilibrium real interest rises. The new equilibrium in the goods market with lower income and a higher real interest rate is illustrated in the graph on the right as the big red dot (top dot). Notice that as income increases (decreases) the real interest must fall (rise) in order to maintain equilibrium in the goods market. This is the relationship that is represented in the downward sloping IS curve.

Every point on the IS curve represents an intersection between desired national saving and desired investment for some income/interest rate pair (Y,r). As such the IS curve is derived holding the determinants of saving and investment, other than Y and r, fixed. When these factors change the IS curve will shift. Since points on the IS curve represent points where aggregate demand is equal to aggregate supply any factor that increases the demand for goods and services will shift the IS curve up and to the right and any factor that decreases the demand for goods and services will shift the IS curve down and to the left. From the savings/investment diagram it follows that any shift of the savings or investment curve that increases the real interest rate, holding Y fixed, will shift up the IS curve. Functionally, the IS curve is represented as

Pluses (+) above the exogenous variables indicate that increases in the variables shift the IS curve up and to the right (increases demand)

Macroeconomics objectives
Managing the economy Macro-economic_policy_objectives

Policy objectives
Economic policy is the deliberate attempt to generate increases in economic welfare. Since the late 1920s, when many advanced economies were on the brink of complete collapse, economists have recognised that there is a role for government and monetary authorities in steering a macro-economy towards increased economic welfare.

During the late 1930s and early 1940s, Keynes outlined most of the policy ground rules for his, and later, generations of policy makers.

The general view before Keynes, including those of the Classical and Neo-Classical economists, was that an economy would move naturally towards maximum economic welfare and full employment when its markets were allowed to operate freely. However, the model of the macro-economy that Keynes had developed during the 1930s in response to the Great Depression clearly showed that a macro-economy would not always automatically or quickly self-correct. The contrast between the Classical and Keynesian perspective is often expressed in terms of the extent to which Adam Smith's invisible hand works, or fails, to maximise economic welfare. Those on the Classical side of the argument believe it does, while those on the Keynesian side generally believe it does not, and that full employment equilibrium is a special, rather than a general case.

Keynes was able to demonstrate that a market economy could become trapped in a downward spiral of falling economic activity and diminishing economic welfare. Given the recent global financial crisis, and the Euro-debt problem, Keynes' ideas are as relevant today as in the 1930s.

Monetary policy is the policy adopted by the monetary authority of a country that controls either the interest rate payable on very short-term borrowing or the money supply, often targeting inflation or the interest rate to ensure price stability and general trust in the currency.[1][2][3]

Unlike fiscal policy, which relies on taxation, government spending, and government borrowing,[4] as tools for a government to manage cyclic financial swings such as recessions, monetary policy aims to manipulate the money supply, i.e. 'printing' more money or decreasing the money supply by changing interest rates or removing excess reserves.

Further goals of a monetary policy are usually to contribute to the stability of gross domestic product, to achieve and maintain low unemployment, and to maintain predictable exchange rates with other currencies.

Monetary economics can provide insight into crafting optimal monetary policy. In developed countries, monetary policy is generally formed separately from fiscal policy.

Monetary policy is referred to as being either expansionary or contractionary.

Expansionary policy occurs when a monetary authority uses its tools to stimulate the economy. An expansionary policy maintains short-term interest rates at a lower than usual rate or increases the total supply of money in the economy more rapidly than usual. It is traditionally used to try to combat unemployment in a recession by lowering interest rates in the hope that less expensive credit will entice businesses into expanding. This increases aggregate demand (the overall demand for all goods and services in an economy), which boosts short-term growth as measured by gross domestic product (GDP) growth. Expansionary monetary policy usually diminishes the value of the currency relative to other currencies (the exchange rate).[5]

Contractionary monetary policy maintains short-term interest rates higher than usual, slows the rate of growth in the money supply, or even shrinks it to slow short-term economic growth and lessen inflation. Contractionary monetary policy can lead to increased unemployment and depressed borrowing and spending by consumers and businesses, which can eventually result in an economic recession if implemented too vigorously.

Fiscal policy is the means by which a government adjusts its spending levels and tax rates to monitor and influence a nation's economy. It is the sister strategy to monetary policy through which a central bank influences a nation's money supply. These two policies are used in various combinations to direct a country's economic goals. Here's a look at how fiscal policy works, how it must be monitored, and how its implementation may affect different people in an economy.

Before the Great Depression, which lasted from October 29, 1929, to the onset of America's entry into World War II, the government's approach to the economy was laissez-faire. Following World War II, it was determined that the government had to take a proactive role in the economy to regulate unemployment, business cycles, inflation, and the cost of money. By using a mix of monetary and fiscal policies (depending on the political orientations and the philosophies of those in power at a particular time, one policy may dominate over another), governments can control economic phenomena.

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How Fiscal Policy Works

Fiscal policy is based on the theories of British economist John Maynard Keynes. Also known as Keynesian economics, this theory basically states that governments can influence macroeconomic productivity levels by increasing or decreasing tax levels and public spending. This influence, in turn, curbs inflation (generally considered to be healthy when between 2% and 3%), increases employment, and maintains a healthy value of money. Fiscal policy plays a very important role in managing a country's economy. For example, in 2012 many worried that the fiscal cliff, a simultaneous increase in tax rates and cuts in government spending set to occur in January 2013, would send the U.S. economy back into recession. The U.S. Congress avoided this problem by passing the American Taxpayer Relief Act of 2012 on Jan. 1, 2013.1

Fiscal Policy

Balancing Act

The idea is to find a balance between tax rates and public spending. For example, stimulating a stagnant economy by increasing spending or lowering taxes, also known as expansionary fiscal policy, runs the risk of causing inflation to rise. This is because an increase in the amount of money in the economy, followed by an increase in consumer demand, can result in a decrease in the value of money—meaning that it would take more money to buy something that has not changed in value.

Let's say that an economy has slowed down. Unemployment levels are up, consumer spending is down, and businesses are not making substantial profits. A government may decide to fuel the economy's engine by decreasing taxation, which gives consumers more spending money while increasing government spending in the form of buying services from the market (such as building roads or schools). By paying for such services, the government creates jobs and wages that are in turn pumped into the economy. Pumping money into the economy by decreasing taxation and increasing government spending is also known as "pump priming." In the meantime, overall unemployment levels will fall.

With more money in the economy and less taxes to pay, consumer demand for goods and services increases. This, in turn, rekindles businesses and turns the cycle around from stagnant to active.

If, however, there are no reins on this process, the increase in economic productivity can cross over a very fine line and lead to too much money in the market. This excess in supply decreases the value of money while pushing up prices (because of the increase in demand for consumer products). Hence, inflation exceeds the reasonable level.

For this reason, fine-tuning the economy through fiscal policy alone can be a difficult, if not improbable, means to reach economic goals.

If not closely monitored, the line between a productive economy and one that is infected by inflation can be easily blurred.

When the Economy Needs to Be Curbed

When inflation is too strong, the economy may need a slowdown. In such a situation, a government can use fiscal policy to increase taxes to suck money out of the economy. Fiscal policy could also dictate a decrease in government spending and thereby decrease the money in circulation. Of course, the possible negative effects of such a policy, in the long run, could be a sluggish economy and high unemployment levels. Nonetheless, the process continues as the government uses its fiscal policy to fine-tune spending and taxation levels, with the goal of evening out the business cycles.

Who Does Fiscal Policy Affect?

Unfortunately, the effects of any fiscal policy are not the same for everyone. Depending on the political orientations and goals of the policymakers, a tax cut could affect only the middle class, which is typically the largest economic group. In times of economic decline and rising taxation, it is this same group that may have to pay more taxes than the wealthier upper class.

Similarly, when a government decides to adjust its spending, its policy may affect only a specific group of people. A decision to build a new bridge, for example, will give work and more income to hundreds of construction workers. A decision to spend money on building a new space shuttle, on the other hand, benefits only a small, specialized pool of experts, which would not do much to increase aggregate employment levels.

That said, the markets also react to fiscal policy. Stocks rose on December 21, 2017, for the first time in three days following passage of the Trump administration's $1.5 trillion U.S. tax bill, the Tax Cuts and Jobs Act.2 3 The Dow Jones Industrial Average gained 99 points or 0.4%, the S&P 500 Index rose 0.25%, and the Nasdaq Composite Index was up 0.14%.

The tax overhaul is forecast to raise the federal deficit by hundreds of billions of dollars—and perhaps as much as $2 trillion—over the next 10 years.4 5 Estimates vary depending on assumptions about how much economic growth the law will spur. The law cuts corporate tax rates permanently by creating a single corporate tax rate of 21% and repeals the corporate alternative minimum tax.3

The law also retains the current structure of seven individual income tax brackets, but in most cases it lowers the rates: the top rate falls from 39.6% to 37%, while the 33% bracket falls to 32%, the 28% bracket to 24%, the 25% bracket to 22%, and the 15% bracket to 12%. The lowest bracket remains at 10%, and the 35% bracket is also unchanged. These changes are set to expire after 2025.3

The Bottom Line

One of the biggest obstacles facing policymakers is deciding how much involvement the government should have in the economy. Indeed, there have been various degrees of interference by the government over the years. But for the most part, it is accepted that a degree of government involvement is necessary to sustain a vibrant economy, on which the economic well-being of the population depends.
