Cyclical Fluctuations

In fact, the causes of business cycles given above are based on the theories of business cycles propounded by economists from time to time. We discuss some of the important theories as under.

I Hawtrey's Monetary Theory

According to Prof. R.G. Hawtrey, "The trade cycle is a purely monetary phenomenon." It is changes in the flow of monetary demand on the part of businessmen that lead to prosperity and depression in the economy. He opines that non-monetary factors like strikes, floods, earthquakes, droughts, wars, etc. may at best cause a partial depression, but not a general depression. In actuality, cyclical fluctuations are caused by expansion and contraction of bank credit which, in turn, lead to variations in the flow of monetary demand on the part of producers and traders. Bank credit is the principal means of payment in the present times. Credit is expanded or reduced by the banking system by lowering or raising the rate of interest or by purchasing or selling securities to merchants. This increases or decreases the flow of money in the economy and thus brings about prosperity or depression.
The expansion phase of the trade cycle starts when banks increase credit facilities. They are provided by reducing the lending rate of interest and by purchasing securities. These encourage borrowings on the part of merchants and producers. This is because they are very sensitive to changes in the rate of interest. So when credit becomes cheap, they borrow from banks in order to increase their stocks or inventories. For this, they place larger orders with producers who, in turn, employ more factors of production to meet the increasing demand. Consequently, money incomes of the owners of factors of production increase, thereby increasing expenditure on goods. The merchants find their stocks being exhausted. They place more orders with producers. This leads to further increase in productive activity, income, outlay, and demand, and a further depletion of stocks of merchants. According to Hawtrey, "Increased activity means increased demand, and increased demand means increased activity. A vicious circle is set up, a cumulative expansion of productive activity."

As the cumulative process of expansion continues, producers quote higher and higher prices. Higher prices induce traders to borrow more in order to hold still larger stocks of goods so as to earn more profits. Thus optimism encourages borrowing, borrowing increases sales, and sales raise optimism.
According to Hawtrey, prosperity cannot continue limitlessly. It comes to an end when banks stop credit expansion. Banks refuse to lend further because their cash funds are depleted and the money in circulation is absorbed in the form of cash holdings by consumers. Another factor is the export of gold to other countries when imports exceed exports as a result of high prices of domestic goods. These factors force the banks to raise interest rates and refuse to lend. Rather, they ask the business community to repay their loans. This starts the recessionary phase.
In order to repay bank loans, businessmen start selling their stocks. This sets the process of falling prices. They also cancel orders with producers. The latter curtail their productive activities due to fall in demand. These, in turn, lead to reduction in

the demand for factors of production. There is unemployment. Incomes fall. Falling demand, prices and incomes are the signals for depression.
Unable to repay bank loans, some firms go into liquidation, thus forcing banks to contract credit further. Thus the entire process becomes cumulative and the economy is forced into depression.

According to Hawtrey, the process of recovery is very slow and halting. As depression continues, traders repay bank loans by selling their stocks at whatever prices they can. As a result, money flows into the reserves of banks and funds increase with banks. Even though the bank rate is very low, there is “credit deadlock” which prevents businessmen to borrow from banks due to pessimism in economic activity. This deadlock can be broken by following a cheap money policy by the central bank which will ultimately bring about recovery in the economy.

Criticisms

Monetarists like Friedman have supported Hawtrey’s theory. But the majority of economists have criticised him for over-emphasising monetary factors to the neglect of non-monetary factors in explaining cyclical fluctuations. Some of the points of criticism are discussed below.

(1) **Credit not the Cause of Cycle.** None can deny that expansion of credit leads to the expansion of business activity. But Hawtrey believes that an expansion of credit leads to a boom. This is not correct because the former is not the cause of the latter. As pointed out by Pigou, “Variations in the bank money supply is a part of the business cycle, it is not the cause of it." At the bottom of the depression, credit is easily available. Even then, it fails to bring a revival. Similarly, contraction of credit cannot bring about a depression. At best, it can create conditions for that. Thus expansion or contraction of credit cannot originate either boom or depression in the economy.

(2) **Money Supply cannot Continue a Boom or Delay a Depression:** Haberler has criticised Hawtrey for “his contention that the reason for the breakdown of the boom is always a monetary one and that prosperity could be prolonged and depression stayed off indefinitely if the money suply were inexhaustible.”But the fact is that even if the supply of money is inexhaustible in the country, neither prosperity can be continued indefinitely nor depression can be delayed idefinitely.

(3) **Traders do not Depend Only on Bank Credit** :
Hamberg has criticised Hawtrey for the role assigned to wholesalers in his analysis.The kingpin in Hawtrey's theory is the trader or the wholesaler who gets credit from banks and starts the upturn or vice-versa. In actuality, traders do not depend exclusively on bank credit but they finance business through their own accumulated funds and borrowing from private sources.

(4) **Traders do not React to changes in Interest Rates**: Further,

Hamberg also does not agree with Hawtrey that traders react to changes in interest rates. According to Hamberg, traders are likely to react favourably to a reduction in the interest rate only if they think that the reduction is permanent. But they do not react favourably during the depression phase because traders expect a further reduction every time the interest rate is reduced. On the other hand, if traders finance their stocks with their own funds, interest rate changes will have little effect on their purchases.

(5) **Factors other than Interest Rate More Important:**
It is an exaggeration to say that the decisions of traders regarding accumulation or depletion of stocks are solely governed by changes in interest rate. As a matter of fact, factors other than the rate of interest are more important in influencing such decisions. They are business expectations, price changes, cost of storage, etc.

(6) **Inventory Investments do not Produce True Cycles** :
Hamberg further points out that in Hawtrey's theory cumulative movements in economic activity are the result of changes in stocks of goods. But fluctuations in inventroy investment can at best produce minor cycles which are not cycles in the true sense of the term.

(7) **Does not Explain Periodicity of Cycle:**
The theory also fails to explain the periodicity of the cyle.

(8) **Ignores Non-Monetary Factors**:
Hawtrey's theory is incomplete because it emphasises only monetary factors and totally ignores such non-monetary factors as innovations, capital stock, multiplieraccelerator interaction, etc.

II. Hayek's Monetary Over-Investment Theory

F.A. Hayek formulated his monetary over-investment theory of trade cycle. He explained his theory on the basis of Wicksell's distinction between the natural interest rate and the market interest rate. The natural rate of interest is that rate at which the demand for loanable funds equals the supply of voluntary savings. On the other hand, the market rate of interest is the money rate which prevails in the market and is determined by the demand and supply of money. According to Hayek, so long as the natural rate of interest equals the market rate of interest, the economy remains in the state of equilibrium and full employment . Trade cycles in the economy are caused by inequality between market and natural interest rates. When the market interest rate is less than the nautral rate, there is prosperity in the economy. On the contrary, when the market interest rate is more than the natural rate, the economy is in depression. According to this thoery, prosperity begins when the market rate of interest is less than the natural rate of interest. In such a situation, the demand for investment funds is more than the supply of available savings. The demand for investment funds is met by the increase in the supply of money. As a result, the interest rate falls. Low interest rate induces producers to get more loans from banks. The producers get more loans to invest for the production of more capital goods. They adopt capital-intensive methods for producing more of capital goods. As a result, production costs fall and profits

increase. The production process becomes very lengthy with the adoption of capitalintensive methods. This has the effect of increasing the prices of capital goods in comparison to consumer goods. There being full employment in the economy, they transfer factors of the production from consumer goods sector to capital goods sector. Consequently, the production of consumer goods falls, their prices increase and their consumption decreases. Forced savings increase with the fall in consumption which are invested for the production of capital goods. This leads to increase in their production. On the other hand, with increase in the prices of consumer goods, their producers earn more profits. Induced by high profits, they try to produce more. For this, they pay higher remuneration to factors of production in comparison with the producers of capital goods. There being competition between the two sectors, prices of factors and prices in the economy continue to rise. This leads to the atmosphere of prosperity in the country and monetary over-investment on factors spreads the boom. According to Hayek, when the prices of factors are rising continously, the rise in production costs bring fall in profits of producers. The producers of capital goods invest less in the expectation of loss in the future. Consequently, the natural interest rate falls. Simultaneously, banks impose restrictions on giving loans to them. With low profits and reduction in loans, producers reduce the production of capital goods and adopt labour-intensive production processes. There is less investment in capital goods. Production process being small and labour-intensive, the demand for money is reduced, which increases the market interest rate which is more than the natural interest rate. Producers transfer the factors from the production of capital goods to that of consumer goods. But more factors cannot be used in the consumer goods sector as compared to the capital goods sector. This leads to fall in the prices of factors and resources become unemployed. Thus, with the continuous reduction in the prices of goods and factors in the economy, a long period of depression and unemployment begins.
According to Hayek, when the fall in prices comes to an end during depression, banks begin to raise the supply of money which reduces the market interest rate below the natural interest rate. This encourages investment and the process of revival begins in the economy.

Criticisms

The monetary over-investment theory of Hayek has been criticised on the following counts:

(1) Narrow Assumption of Full Employment :This theory is based on the assumption of full employment according to which capital goods are produced by reducing consumer goods. In reality, there is no full employment of resources. If resources remain unutilised, the expansion of both the capital goods sector and consumer goods sector may occur simultaneously. In such a situation, there is no need of transferring resources from one sector to the other.

(2) Unrealistic Assumption of Equilibrium : The assumption of this theory that in the beginning savings and investment are in equilibrium in the economy and the banking system destroys this equilibrium is unrealistic. This is because the equilibrium may deviate due to both

internal and external reasons.

(3) Interest Rate not the only Determinant : Hayek assumes changes in the rate of interest as the cause of fluctuations in the economy. This is not correct because besides changes in the rate of interest, the expectations of profit, innovation, invention, etc. also affect trade cycles.

(4) Undue Importance to Forced Savings : Prof. Strigl has criticised this theory for giving undue importance to forced savings. According to him, when people with fixed incomes reduce their consumption with the increase in prices and the high income groups also reduce their consumption to the same extent, savings will not be forced but voluntary.

(5) Investment does not fall with Increase in Consumer Goods: Hayek argues that with the production of consumer goods and the increase in profits from them, investment falls in capital goods. This is not correct. According to Keynes, the marginal productivity of capital increases with the increase in profits of consumer goods. As a result, investment in capital goods also increases and does not fall.

6. Incomplete Theory : Hayek's theory is incomplete because it does not explain the various phases of trade cycle.

III. Schumpeter's Innovations Theory

The innovations theory of trade cycles is associated with the name of Joseph Schumpeter. According to Schumpeter, innovations in the structure of an economy are the source of economic fluctuations. Trade cycles are the outcome of economic development in a capitalist society. Schumpeter accepts Juglar's statement that "the cause of depression is prosperity," and then gives his own view about the originating cause of the cycle.

Schumpeter's approach involves the development of his model into two stages. The first stage deals with the initial impact of innovation and the second stage follows through reactions to the original impact of innovation.

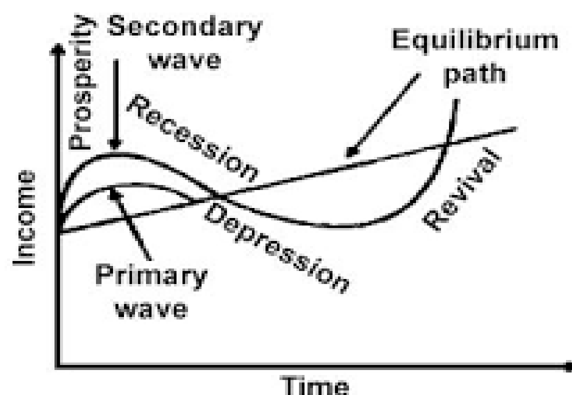
The first approximation starts with the economic system in equilibrium with every factor fully employed. Every firm is in equilibrium and producing efficiently with its costs equal to its receipts. Product prices are equal to both average and marginal costs. Profits and interest rates are zero. There are no savings and investments. This equilibrium is characterised by Schumpeter as the "circular flow" which continues to repeat itself in the same manner year after year, similar to the circulation of the blood in an animal organism. In the circular flow, the same products are produced every year in the same manner.

Schumpeter's theory starts with the breaking up of the circular flow by an innovation in the form of a new product by an entrepreneur for earning profit.

By innovation Schumpeter means "such changes in the production of goods as cannot be affected by infinitesimal steps or variations on the margin." An innovation may consist of : (1) the introduction of a new product;

(2) the introduction of a new method of production;

(3) the opening up of a new market;
(4) the conquest of a new source of raw materials or semi-manufactured goods;
(5) the carrying out of the new organisations of an industry. Innovations are not inventions. According to Schumpeter, there is nothing that can explain that inventions occur in a cyclical manner.It is the introduction of a new product and the continual improvements in the existing ones that are the principal causes of business cycles. Schumpeter assigns the role of an innovator not to the capitalist but to an entrepreneur. The entrepreneur is not a man of ordinary ability but one who introduces something entirely new. He does not provide funds but directs their use. To perform his economic function, the entrepreneur requires two things: first, the existence of technical knowledge in order to produce new products, and second, the power of disposal over the factors of production in the form of bank credit. According to Schumpeter, a reservoir of untapped technical knowledge exists in a capitalist society which he can make use of. Therefore, credit is essential for breaking the circular flow.
The innovating entrepreneur is financed by expansion of bank credit. Since investment in an innovation is risky, he must pay interest on it. With his newly acquired funds, the innovator starts bidding away resources from other industries. Money incomes increase. Prices begin to rise, thereby stimulating further investment. The new innovation starts producing goods and there is an increased flow of goods in the economy. Consequently, supply exceeds demand. Prices and cost of production of goods start declining until recession sets in. Because of the low prices of goods, producers are not willing to expand production. During this period of recession, credit, prices and interest rate decline but total output is likely to average larger than in the preceding prosperity.
Thus Schumpeter's first approximation consists of a two-phase cycle. The economy starts at the equilibrium state, rises to a peak and then starts downward into a recession and continues till the new equilibrium is reached. This new equilibrium will be at a higher level of income than the initial equilibrium because of the innovation which started the cycle. This is shown as the “Primary Wave” in Figure .



The second approximation of Schumpeter follows through the reaction of the impact of original innovation. Once the original innovation becomes successful and profitable, other entrepreneurs follow it in "swarm-like clusters." Innovation in one field induces innovations in related fields. Consequently, money incomes and prices

rise and help to create a cumulative expansion throughout the economy. With the increase in the purchasing power of consumers, the demand for the products of old industries increases in relation to supply. Prices rise further. Profits increase and old industries expand by borrowing from the banks. It induces a secondary wave of credit inflation which is superimposed on the primary wave of innovation. Overoptimism and speculation add further to the boom. After a period of gestation, the new products start appearing in the market displacing the old products and enforcing a process of liquidation, readjustment and absorption.

The demand for the old products is decreased. Their prices fall. The old firms contract output and some are even forced to run into liquidation. As the innovators start repaying bank loans out of profits, the quantity of money is decreased and prices tend to fall. Profits decline. Uncertainty and risks increase. The impulse for innovation is reduced and eventually comes to an end. Depression sets in, and the painful process of readjustment to the "point of previous neighbourhood of equilibrium" begins. Ultimately, the natural forces of recovery bring about a revival.

Schumpeter believes in the existence of Kondratieff long wave of upswings and downswings in economic activity. Each long wave upswing is brought about by an innovation which leads to abundance of goods for the masses. Once the upswing ends, the long wave downswing begins. Thus the second approximation of Schumpeter's theory of trade cycle develops into a four phase cycle with the recession which was the second phase in the first approximation continuing downward to give the depression phase. This extension of cycle is followed by a period of revival which continues till the equilibrium level is reached. This is shown as the "Secondary Wave" in Figure .

Criticisms

Schumpeter's treatment of the different phases and turning points of the cycle is novel and different from all other economists. But it is not free from certain criticisms.

(1) **Innovator not Necessary for Innovations.** Schumpeter's analysis is based on the innovator. Such persons were to be found in the 18th and 19th centuries who made innovations. But now all innovations form part of the functions of joint stock companies. Innovations are regarded as the routine of industrial concerns and do not require an innovator as such.

(2) **Innovations not the Only Cause of Cycles.** Schumpeter's contention that cyclical fluctuations are due to innovations is not correct. As a matter of fact, trade cycles may be due to psychological, natural or financial causes.

(3) **Bank Credit not the Only Source of Funds.** Schumpeter gives too much importance to bank credit in his theory. Bank credit may be important in the short run when industrial concerns get credit facilities from banks. But in the long run when the need for capital funds is much greater, bank credit is insufficient. For this, business houses have to float fresh shares and debentures in the capital market. Schumpeter's theory is weak in that it does not take these factors into consideration.

(4) **Innovation financed through Voluntary Savings does not produce a Cycle.** Critics point out that if an innovation is financed through voluntary savings or internal funds, there will not be an inflationary rise in prices. Consequently, in an underemployed economy an innovation financed through voluntary savings might not generate a cycle.

(5) **Full Employment Assumption Unrealistic.** Schumpeter's analysis is based on the unrealistic assumption of full employment of resources to begin with. But the fact is that at the time of revival, the resources are unemployed. Thus the introduction of an innovation may not lead to the withdrawal of labour and other resources from old industries. Thus the competitive impact of an innovation would not increase costs and prices. Since full employment is an exception rather than the rule. Thus Schumpeter's theory is not a correct explanation of trade cycles.

IV. The Psychological Theory

The psychological theory of business cycle has been mainly developed by Prof. A.C. Pigou.8 This theory attempts to explain the phenomenon of business cycle on the basis of changes in the psychology of industrialists and businessmen. The tendency of the business class is to react excessively to the changing conditions of the economy that are mainly responsible for cyclical fluctuations.

According to Pigou, expectations originate from some real factors such as good harvests, wars, natural calamities, industrial disputes, innovations, etc. But he attributes the causes of business cycle into two categories : (a) inpulses and (b) conditions. Impulses refer to those causes which set a process in motion. The conditions, on the other hand, are the vehicles through which the process passes and upon which the impulses act. These conditions are the decision making centres which, in turn, shift the levels of economic activities and bring necessary changes in their compositions. They include monetary institutions, market structures, trade unions, etc.

Pigou divides impulses into two parts : (i) The expectations held by businessmen, and (ii) the actual economic resources owned by them. The expectations depend upon the psychology of businessmen and on their control over resources. But expectations which correspond to actual changes in the economy and are realised, they do not generate cyclical fluctuations.

According to Pigou, it is only when expectations are devoid of their realistic basis, there may be error in forecasting. Such type of expectations cause disturbances in the economy and result in waves of optimism and pessimism.

Such "errors in forecasting" may be due to :

(i)the deviation of actual demand from anticipated demand on the part of consumers;

(ii) the continual and unpredictable change in the values of economic variables, and (iii) the existence of time lags on account of gestation periods.

Once an error of forecasting occurs in any sector of the economy, it spreads in the same directions. Once this “impulse” starts acting on the “conditions”, it feeds upon itself. According to Pigou, this is because there is a certain measure of psychological interdependence. In other words, the expectations of optimism or pessimism on the part of businessmen strengthen the building up of further expectations of the same type. When businessmen have a feeling of optimism about the future prospects of business, it would increase the demand for investment resources and inter-industry relations would induce businessmen in other industries to be optimist. Consequently, there is the emergence of boom conditions in the economy.

Pigou opines that the wave of optimism is replaced by pessimism on account of time lags in production. Being over optimistic, some producers make the mistake of over investing in goods. When the goods start coming into the market in large quantities, it is not possible to sell them at remunerative prices. As a result, inventories accumulate. A wave of pessimism starts which spreads to other sectors of the economy. This leads to the emergence of slump in the country. To Pigou, the lower turning point starts when inventories are depleted and the "bolder spirit of industry" helps to revive expectations. As a result, the rays of optimism spread slowly and revival starts which leads to boom and so on.

Thus according to this theory, booms and slumps are due to alternative waves of optimism and pessimism on the part of businessmen and industrialists

Criticisms

The psychology theory has been criticised for the following reasons:

1. This is not a theory of business cycles in the true sense because it fails to explain the different phases of a business cycle.
2. It fails to explain the periodicity of a business cycle.
3. It neglects the role of various exogenous and monetary factors which influence business expectations.
4. The theory does not explain fully the causes that give rise ‘to waves of optimism and pessimism’ in the business world.
5. The theory fails to explain the reason for deficiency of demand when goods start entering the market in larger quantities. Moreover, it does not explain as to why the deficiency of demand overtakes the flow of goods in the market.

V. Keynes's Theory

The Keynesian theory of the trade cycle is an integral part of his theory of income, output and employment. Trade cycles are periodic fluctuations of income, output and employment. Keynes regards the trade cycle as mainly due to "a cyclical change in the marginal efficiency of capital, though complicated and often aggravated by associated changes in the other significant short-period variables of the economic system."

According to Keynes, the principal cause of depression and unemployment is the lack of aggregate demand. Revival can be brought about by raising aggregate demand which, in turn, can be raised by increasing consumption and/or investment. Since consumption is stable during the short-run, revival is possible by increasing investment. Similarly, the main cause of the downturn is reduction in investment. Thus in the Keynesian explanation of the trade cycle, "the cycle consists primarily of fluctuations in the rate of investment. And fluctuations in the rate of investment are

caused mainly by fluctuations in the marginal efficiency of capital." The MEC (marginal efficiency of capital) depends on the supply price of capital assets and their prospective yield. Since the supply price of capital assets is stable in the short-run, the MEC is determined by the prospective yield of capital assets, which, in turn, depends on business expectations. Fluctuations in the rate of investment are also caused by fluctuations in the rate of interest. But Keynes gives more importance to fluctuations in the MEC as the principal cause of cyclical fluctuations.

To explain the course of the Keynesian cycle, we start with the expansion phase. During the expansion phase, the MEC is high. Businessmen are optimistic. There is rapid increase in the rate of investment. Consequently, output, employment and income increase. Every increase in investment leads to a multiple increase in income via the multiplier effect. This cumulative process of rising investment, income and employment continues till the boom is reached.

As the boom progresses, there is a tendency for the MEC to fall due to two reasons. First, as more capital goods are being produced steadily, the current yield on them declines. Second, at the same time the current costs of new capital goods rise due to shortages and bottlenecks of materials and labour. During the downturn, investment falls due to a fall in the MEC and rise in the rate of interest. This leads to a cumulative decline in employment and income via the reverse operation of the multiplier. Further, the fall in the MEC may shift the consumption function downward thereby hastening the depression. Keynes attaches more importance to the sudden collapse of the MEC than to a rise in the rate of interest as an explanation of the downturn of the cycle leading to the crisis and the depression.

Unlike the sudden collapse of the economic system, the revival takes time. It depends on factors which bring about the recovery of the MEC. "The time which must elapse before recovery begins, depends partly upon the magnitude of the normal rate of growth of the economy and partly upon the length of life of capital goods. The shorter the length of life of durable assets, the shorter the depression. And also, the more rapid the rate of growth, the shorter the depression." Another factor which governs the duration of depression is the "carrying costs of surplus stocks." According to Keynes, the carrying cost of surplus stocks during the depression is seldom less than 10 per cent per annum. So for a few years, disinvestment in stocks will continue till the surplus stocks are exhausted. Optimism takes the place of pessimism. The MEC increases. Fresh investment starts taking place. Revival has started.

Criticisms

Keynes's theory of the trade cycle is superior to the earlier theories because "it is more than a theory of the business cycle in the sense that it offers a general explanation of the level of employment, quite independently of the cyclical nature of changes in employment." However, critics are not lacking in pointing out its weakness.

(1) **Overemphasis on the Role of Expectations.** Keynes has been criticised for his analysis of business cycle based on expectations. In fact, he overemphasised the role of expectations in influencing the MEC. According to Hart, Keynes relied on "convention" for forecasting changes in business expectations. The reliance on the conventional hypothesis makes Keynes' concept of expectations superfluous and unrealistic.

(2) **Psychological Theory.** Keynes considers the trade cycle as mainly due to fluctations in the MEC. The MEC, in turn, determines the rate of investment. And investment decisions, depend upon the psychology of businessmen or producers. Thus Keynes' theory is not much different from Pigou's psychological theory of the trade cycle.
(3) Explanation of Crisis Wrong. Keynes attributes the downturn to the sudden collapse in the MEC. Accroding to Hazlitt, the term MEC being vague and ambiguous, "Keynes' explanation of the crisis of the marginal efficiency of capital is either a useless truism or an obvious error."
(4) **Incomplete Theory.** Another weakness of Keynes' theory of the trade cycle is that some of its variables such as expectations, MEC and investment cannot explain the different phases of the cycle. In the words of Dillard, "It is less than a complete theory of the business cycle because it makes no attempt to give a detailed account of the various phases of the cycle."
(5) **Not Based on Empirical Data.** Saulnier criticises Keynes's for lacking in factual proof. According to him, Keynes makes no attempt to test any of his deductions with facts. Dillard also points toward this defect when he writes that Keynes "does not examine closely the empirical data of cyclical fluctuations."
(6) **One-Sided Theory**. One of the serious omissions of Keynes's theory of the trade cycle is the acceleration principle. This made his theory one-sided because his explanation centres round the principle of multiplier. As pointed out by Sir John Hicks, "The theory of acceleration and the theory of multiplier are two sides of the theory of fluctuations, just as the theory of demand and the theory of supply are the two sides of the theory of value."

VI. Samuelson's Model of Business Cycle

Prof. Samuelson10 constructed a multiplier-accelerator model assuming one period lag and different values for the MPC (α) and the accelerator (β) that result in changes in the level of income pertaining to five different types of fluctuations.

The Samuelson model is

$$Yt = Gt+Ct+It \qquad ...(1)$$

where Yt is national income Y at time t which is the sum of government expenditure Gt , consumption expenditure Ct and induced investment It .

$$Ct= \alpha Yt–1 \qquad ...(2)**$$

$$I t= \beta(Ct–Ct–1) \qquad ...(3)$$

Substituting equation (2) in (3) we have,

$$I t = \beta(\alpha Yt–1 – \alpha Yt–2)$$

$$I t = \beta\alpha Yt-1 – \beta\alpha Yt–2 \qquad ...(4)$$

$$Gt = 1 \qquad ...(5)$$

Substituting equations (2), (4) and (5) in (1) we have

$$Y_t = 1 + \alpha Y_{t-1} + \beta\alpha Y_{t-1} - \beta\alpha Y_{t-2} \quad ...(6)$$
$$= 1 + \alpha(Y_{t-1} + \beta Y_{t-1}) - \beta\alpha Y_{t-2}$$
$$= 1 + \alpha(1+\beta) Y_{t-1} - \beta\alpha Y_{t-2} \quad ...(7)$$

According to Samuelson, "If we know the national income for two periods, the national income for the following period can be simply derived by taking a weighted sum. The weights depend, of course, upon the values chosen for the marginal propensity to consume and for the relation (i.e.accelerator)". Assuming the value of the marginal propensity to consume to be greater than zero and less than one (0< α 0), Samuelson explains five types of cyclical fluctuations which are summarised in the Table 1.

Table 1. Samuelson's Interaction Model

Case	*Values*	*Behaviour of the Cycle*
1	α = .5, β = 0	Cycleless Path
2	α = .5, β = 1	Damped Fluctuations
3	α = .5, β = 2	Fluctuations of Constant Amplitude
4	α = .5, β = 3	Explosive Cycles
5	α = .5, β = 4	Cycleless Explosive Path

Case 1 : Samuelson's case 1 shows a cycleless path because it is based only on the multiplier effect, the accelerator playing no part in it. This is shown in Fig. 6 (A).

Case 2 shows a damped cyclical path fluctuating around the static multiplier level and gradually subsiding to that level, as shown in Fig. 6 (B).

Case 3 depicts cycles of constant amplitude repeating themselves around the multiplier level. This case is depicted in Fig. 6 (C).

Case 4 reveals anti-damped or explosive cycles, see Fig. 6 (D).

Case 5 relates to a cycleless explosive upward path eventually approaching a compound interest rate of growth, as shown in Fig. 6 (E). Of the five cases explained above, only three cases 2, 3 and 4 are cyclical in nature. But they can be reduced to two because case 3 pertaining to cycles of constant amplitude has not been experienced. So far as case 2 of damped cycles is concerned these cycles have been occurring irregularly in a milder form over last half century. Generally, cycles in the post-World War II period have been relatively damped compared to those in the inter-World War II period. They are the result of "such disturbances—which may be called

erratic shocks —arising from exogenous factors, such as wars, changes in crops, inventions and so on 'which' might be expected to come alongwith fair persistence." But it is not possible to measure their magnitude. Case 4 of explosive cycles has not been found in the past, its absence being the result of endogenous economic factors that limit the swings. Hicks has, however, built a model of the trade cycle assuming values that would make for explosive cycles kept in check by ceilings and floors.

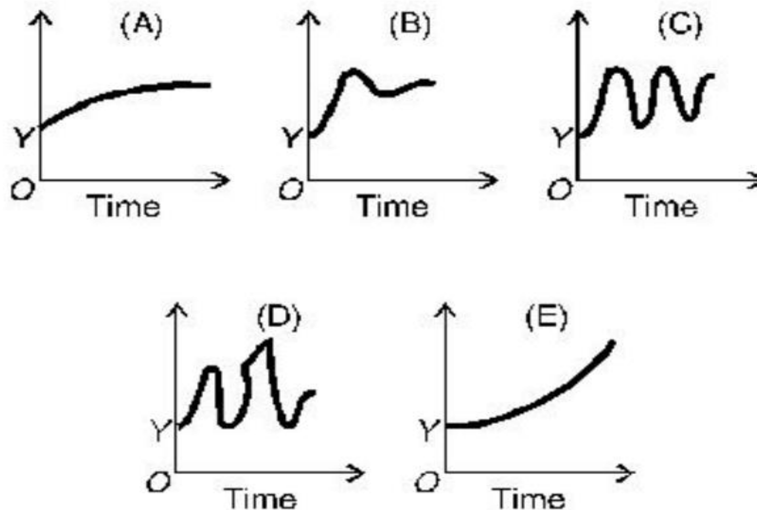


Fig. 6

Critical Appraisal of the Model

The interaction of the multiplier and the accelerator has the merit of raising national income at a much faster rate than by either the multiplier or the accelerator alone. It serves as a useful tool not only for explaining business cycles but also as a guide to stabilisation policy. As pointed out by Prof. Kurihara, "It is in conjunction with the multiplier analysis based on the concept of marginal propensity to consume (being less than one) that the acceleration principle serves as a useful tool of business cycle analysis and a helpful guide to business cycle policy." The multiplier and the accelerator combined together produce cyclical fluctuations. The greater the value of the accelerator (β), the greater is the chance of an explosive cycle. The greater the value of the multiplier, the greater the chance of a cycleless path.

Limitations

Despite these apparent uses of the multiplier-accelerator interaction, this analysis has its limitations:

(1) Samuelson is silent about the length of the period in the different cycles explained by him.
(2) This model assumes that the marginal propensity to consume (α) and the accelerator (β) are constants, but in reality they change with the level of income so that this is applicable only to the study of small fluctuations.
(3) The cycles explained in this model oscillate about a stationary level in a trendless economy. This is not realistic because an economy is not trendless but it is in a process of growth. This has led Hicks to formulate his theory of the trade cycle in a growing economy.
(4) According to Duesenberry, it presents a mechanical explanation of the trade cycle because it is based on the multiplier-accelerator interaction in rigid form.
(5) It ignores the effects of monetary changes upon business cycles.

References

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