



UNIVERSITY OF CALICUT
SCHOOL OF DISTANCE EDUCATION

MA ECONOMICS

II SEMESTER
CORE COURSE

**MACROECONOMICS:
THEORIES AND POLICIES II
(ECO2C06)**

(2019 Admission ONWARDS)

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MACROECONOMICS : THEORIES AND POLICIES II

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SECOND SEMESTER

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CORE COURSE :ECO2C06**

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MODULE I

CLASSICAL VS KEYNES

“Economics is an easy subject in which few excel”--
John Maynard Keynes

INTRODUCTION TO MACROECONOMICS

Macroeconomics is the branch of economics studying the behaviour of the aggregate economy – at the regional, national or international level. In other words Macroeconomics is the study of the behavior of the whole economy or economy as a whole. It is concerned with the determination of the broad aggregates in the economy, in particular the national output, unemployment, inflation and the balance of payments position.

The way in which we nowadays study macroeconomics largely owes its origins to John Maynard Keynes’s “The General Theory of Employment, Interest and Money”. Published in 1936, “The General Theory” was regarded by its author, and by many others since, as a revolutionary work. In it Keynes set out to challenge the

mainstream neoclassical economic thought of his day, which he castigated as unable to explain or offer policy solutions for the high level of unemployment which, in Britain between 1921 and 1939, was just under 10 per cent at its lowest level and rose to 22 per cent at the depth of the depression in 1930.

The term ‘macroeconomics’ was coined and used by a Norwegian economist, Ragnar Frisch in 1933 in his paper “Propagation Problems and Impulse Problems in Dynamic Economics” in ‘Economic Essays in the Honor of Gustav Cassel’(London, 1933). The prefix ‘macro’ meaning large has been derived from Greek language.

What is macroeconomics?

The aim of studying macroeconomics is to understand how an economy works, and identifying the levers that can be pulled to put the overall economy on the right path of growth. The system that is a result of different economic agents coming into contact is much more complex than the sum of its independent and often disjoint parts.

Moreover, it is strictly “non-experimental” as we do not have the luxury of conducting controlled experiments like in the field of science. We can just wait

and observe the effects of broader policy measures with a certain level of accuracy and a tinge of hope.

It usually deals with goals that are conflicting; ensuring growth, taming inflation, full employment and fair income distribution at the same time!

Classical macroeconomics

The term “classical economics” was firstly coined by KARL MARX to refer the economic theories of David Ricardo and his predecessors including Adam Smith. Classical economics covered almost a period of 150 years (1776-1929). The leaders of this school were David Ricardo, Malthus, J.S Mill, J.B Say and A.C Pigou.

Classical economics is that body of thought which existed prior to the publication of Keynes’s (1936) *General Theory*. For Keynes the classical school not only included Adam Smith, David Ricardo and John Stuart Mill, but also ‘the *followers* of Ricardo, those, that is to say, who adopted and perfected the theory of Ricardian economics’ (Keynes, 1936, p. 3). Keynes was therefore at odds with the conventional history of economic thought classification, particularly with his inclusion of both Alfred Marshall and Arthur Cecil Pigou within the classical school. However, given that most of the theoretical advances which distinguish the neoclassical

from the classical period had been in microeconomic analysis, Keynes perhaps felt justified in regarding the macroeconomic ideas of the 1776–1936 period, such as they existed, as being reasonably homogeneous in terms of their broad message. This placed great faith in the natural market adjustment mechanisms as a means of maintaining full employment equilibrium.

Before moving on to examine the main strands of macroeconomic thought associated with the classical economists, the reader should be aware that, prior to the publication of the *General Theory*, there was no single unified or formalized theory of aggregate employment, and substantial differences existed between economists on the nature and origin of the business cycle (see Haberler, 1963). The structure of classical macroeconomics mainly emerged after 1936 and did so largely in response to Keynes's own theory in order that comparisons could be made. Here we take the conventional approach of presenting a somewhat artificial summary of classical macroeconomics, a body of thought that in reality was extremely complex and diverse.

Although no single classical economist ever held all the ideas presented below, there are certain strands of thought running through the pre-Keynes literature which

permit us to characterize classical theory as a coherent story with clearly identifiable building-blocks. To do so will be analytically useful, even if ‘historically somewhat inaccurate’ (see Ackley, 1966, p. 109). Even an ‘Aunt Sally’ version of the classical theory can, by comparison, help us better understand post-1936 developments in macroeconomic theory. We accept that, whilst the major presentations of the ‘Keynes v. Classics’ debate consist of ahistorical fictions – especially those of Hicks (1937) and Leijonhufvud (1968) – and serve as straw men, they aid our understanding by overtly simplifying both the Keynes and the classics positions.

Classical economists were well aware that a capitalist market economy could deviate from its equilibrium level of output and employment. However, they believed that such disturbances would be temporary and very short-lived. Their collective view was that the market mechanism would operate relatively quickly and efficiently to restore full employment equilibrium. If the classical economic analysis was correct, then government intervention, in the form of activist stabilization policies, would be neither necessary nor desirable. Indeed, such policies were more than likely to create greater instability. As we shall see later, modern champions of the old

classical view (that is, new classical equilibrium business cycle theorists) share this faith in the optimizing power of market forces and the potential for active government intervention to create havoc rather than harmony. It follows that the classical writers gave little attention to either the factors which determine aggregate demand or the policies which could be used to stabilize aggregate demand in order to promote full employment. For the classical economists full employment was the normal state of affairs. That Keynes should attack such ideas in the 1930s should come as no surprise given the mass unemployment experienced in all the major capitalist economies of that era. But how did the classical economists reach such an optimistic conclusion? In what follows we will present a ‘stylized’ version of the classical model which seeks to explain the determinants of an economy’s level of real output (Y), real (W/P) and nominal (W) wages, the price level (P) and the real rate of interest (r) (see Ackley, 1966). In this stylized model it is assumed that:

1. All economic agents (firms and households) are rational and aim to maximize their profits or utility; furthermore, they do not suffer from money illusion;

2. All markets are perfectly competitive, so that agents decide how much to buy and sell on the basis of a given set of prices which are perfectly flexible;
3. All agents have perfect knowledge of market conditions and prices before engaging in trade;
4. Trade only takes place when market-clearing prices have been established in all markets, this being ensured by a fictional Walrasian auctioneer whose presence prevents false trading;
5. Agents have stable expectations.

These assumptions ensure that in the classical model, markets, including the labour market, always clear. To see how the classical model explains the determination of the crucial macro variables, we will follow their approach and divide the economy into two sectors: a real sector and a monetary sector. To simplify the analysis we will also assume a closed economy, that is, no foreign trade sector.

In examining the behaviour of the real and monetary sectors we need to consider the following three components of the model: (i) the classical theory of employment and output determination, (ii) Say's Law of markets, and (iii) the quantity theory of money. The first two components show how the equilibrium values of the real variables in the model are determined exclusively in

the labour and commodity markets. The third component explains how the nominal variables in the system are determined. Thus in the classical model there is a dichotomy. The real and monetary sectors are separated. As a result, changes in the quantity of money will not affect the equilibrium values of the real variables in the model. With the real variables invariant to changes in the quantity of money, the classical economists argued that the quantity of money was neutral.

The Classical Revolution

Classical economics emerged as a revolution against a body of economic doctrines known as *mercantilism*. Mercantilist thought was associated with the rise of the nation state in Europe during the sixteenth and seventeenth centuries. Two tenets of mercantilism were (1) bullionism, a belief that the wealth and power of a nation were determined by its stock of precious metals, and (2) the belief in the need for state action to direct the development of the capitalist system.

Adherence to bullionism led countries to attempt to secure an excess of exports over imports to earn gold and silver through foreign trade. Methods used to secure this favorable balance of trade included export subsidies,

import duties, and development of colonies to provide export markets. State action was believed to be necessary to cause the developing capitalist system to further the interests of the state. Foreign trade was carefully regulated, and the export of bullion was prohibited to serve the ends of bullionism. The use of state action was also advocated on a broader front to develop home industry, to reduce consumption of imported goods, and to develop both human and natural resources.

In contrast to the mercantilists, classical economists emphasized the importance of *real* factors in determining the “wealth of nations” and stressed the optimizing tendencies of the free market in the absence of state control. Classical analysis was primarily *real* analysis; the growth of an economy was the result of increased stocks of the factors of production and advances in techniques of production. Money played a role only in facilitating transactions as a *means of exchange*. Most questions in economics could be answered without analyzing the role of money. Classical economists mistrusted government and stressed the harmony of individual and national interests when the market was left unfettered by government regulations, except those necessary to ensure that the market remained competitive.

Both of these aspects of classical economics—the stress on real factors and the belief in the efficacy of the free-market mechanism—developed in the course of controversies over long-run questions concerning the determinants of economic development. These classical positions on long-run issues were, however, important in shaping classical economists’ views on short-run questions.

The attack on bullionism led classical economists to stress that money had no intrinsic value. Money was important only for the sake of the goods it could purchase. Classical economists focused on the role of money as a means of exchange. Another role money had played in the mercantilist view was as a spur to economic activity. In the short run, mercantilists argued, an increase in the quantity of money would lead to an increase in demand for commodities and would stimulate production and employment. For classical economists to ascribe this role to money in determining real variables, even in the short run, was dangerous in light of their de-emphasis of the importance of money.

The classical attack on the mercantilist view of the need for state action to regulate the capitalist system also had implications for short-run macroeconomic analysis.

One role for state action in the mercantilist view was to ensure that markets existed for all goods produced. Consumption, both domestic and foreign, must be encouraged to the extent that production advanced. The classical response is stated by John Stuart Mill: “In opposition to these palpable absurdities it was triumphantly established by political economists that consumption never needs encouragement. “

As in other areas, classical economists felt that the free-market mechanism would work to provide markets for any goods that were produced: “The legislator, therefore, need not give himself any concern about consumption.” The classical doctrine was that, in the aggregate, production of a given quantity of output will generate sufficient demand for that output; there could never be a “want of buyers for all commodities.” Consequently, classical economists gave little explicit attention to factors that determine the overall demand for commodities.

Thus, two features of the classical analysis arose as part of the attack on mercantilism:

1. Classical economics stressed the role of real as opposed to monetary factors in determining output and

employment. Money had a role in the economy only as a means of exchange.

2. Classical economics stressed the self-adjusting tendencies of the economy. Government policies to ensure an adequate demand for output were considered by classical economists to be unnecessary and generally harmful.

Production

A central relationship in the classical model is the aggregate **production function**. The production function, which is based on the technology of individual firms, is a relationship between the level of output and the level of factor inputs. For each level of inputs, the production function shows the resulting level of output and is written as

$$Y = F(\bar{K}, N)$$

where Y is output, \bar{K} is the stock of capital (plant and equipment), and N is the quantity of the homogeneous labor input.

For the short run, the stock of capital is assumed to be fixed, as indicated by the bar over the symbol for capital. The state of technology and the population are also assumed to be constant over the period considered. For

this short-run period, output varies solely with variations in the labor input (N) drawn from the fixed population. Classical economists assumed that the quantity of labor employed would be determined by the forces of demand and supply in the labor market.

Say's Law of Market

Say's law of market can be stated as simply "supply creates its own demand". In other words, every supply of output creates an equivalent demand for output so that there can never be a problem of general over production. According to this law, every supply creates its own demand because the very fact that a good is offered for sale implies that something is being demanded in return.

The law denies any possibility of deficiency of aggregate demand. Say's law was basically formulated in terms of barter economy. What Say had in mind was that people work not for the sake of doing work but only to obtain goods and services that give the required satisfaction. The very act of production therefore constitutes demand for other goods. Thus supply creates automatically its own demand. Under these conditions it is evident that there can be no general over production of

goods and hence the aggregate must equal the aggregate supply.

The classical economists believed that the law also held true for an economy using money, because they believed that people do not desire money for its own sake. This implies that they sell their output or services for money, the money so earned would in turn be promptly spent on other goods. They assume that money is merely a medium of exchange. As such the law formed in terms of barter economy would hold true in an economy using money.

Implications of Say's Law

1. Since there is automatic adjustment between production and consumption, there is no need for the government to interfere in the functioning of the economic system.
2. So long as there exist unemployed resources in the economy, it is profitable to employ them. Hence the economy will operate at the level of full employment.
3. The mechanism of interest flexibility brings about equality between savings and investment.
4. The mechanism of wage flexibility brings about full employment of labour.

Classical System

The classical theory is the theory of full employment. It simply outlines a model which will ensure the maintenance of equilibrium at full employment level. According to the classical economists, the economy consists of three markets: (i) Labour market; (ii) Money market; and (iii) Goods market. The classical economists assumed that the operation of the forces of supply and demand in each of these markets would finally result in full employment. We shall deal these markets separately in the following sections.

I. Labour Market

The equilibrium level of aggregate output and employment in the labour market, according to the classical economists, is determined by the aggregate production function and the demand and supply schedules of labour.

The aggregate production function depicts the relationship between aggregate inputs and aggregate output. According to classical, the aggregate output is a function of the economy's capital stock, technology and the amount of labour employed. In equation form, the relationship is

$$Q = f (N, K, T)$$

Where Q denotes the level of output, N denotes the level of employment, K denotes the stock of capital and T denotes the level of technology.

Output is assumed to be positively related to the capital stock, technology and the amount of labour employed. If the capital stock and technology are assumed constant, the relationship $Q = f(N, K, T)$ may be written as

$$Q = f(N)$$

The demand for labour

The demand curve for labour is derived from the production function. It is the slope of the production function because it consists of the marginal product of labour. Under perfect competition firms hire labourers until the money wage is equal to the general price level multiplied by the marginal physical product of labour. That is,

$$W = P \times MPP_L$$

Where W represents the cost of hiring an additional worker (money wage) and $P \times MPPL$ represents the revenue associated with the employment of an additional worker (Marginal revenue product).

We can state the same idea in terms of real wages by dividing both sides of the equation by the general price level 'P'

$$\frac{W}{P} = P \times \frac{MPP_L}{P} = MPP_L$$

Where $\frac{W}{P}$ is the real wage and MPP_L is the marginal physical product of labour.

Since the demand for labour is determined by the MPP_L and the real wage ($\frac{W}{P}$), the demand for labour function is also a function of real wages.

$$D_N = F\left(\frac{W}{P}\right)$$

Where D_N is the amount of labour demanded and $\frac{W}{P}$ is the real wage rate.

The demand function of labour varies inversely with the real wage rate. In other words, more and more employment is offered only as the wage rate is lowered. This is so because the marginal product of labour decreases as output increases with the increase in employment.

The supply of labour

As in the case of demand for labour function, the real wage plays a key role in the supply of labour function. In fact the amount of labour supplied is assumed to be a function of the real wage by the classical economists. The supply of labour function can be written as

$$S_N = f\left(\frac{W}{P}\right)$$

Where S_N is the amount of labour supplied and $\frac{W}{P}$ is the real wage rate. The amount of labour supplied is assumed to be positively related to the real wage rate, that is, at higher real wages more labour will be supplied.

Equilibrium

For the labour market to be in equilibrium the amount of labour demanded must equal the amount of labour supplied. Thus the equilibrium in the labour market occurs at the intersection of demand and supply curves.

The equilibrium level of employment represents a state of full employment. At this position all the persons who are willing and able to work at the existing wage rate have been employed. There may be some voluntary unemployment, but there will be no involuntary unemployment at this point. According to classical economists, involuntary unemployment can arise only when real wages are high. If there are flexible wages the market forces allow the wages to fall till all workers are employed and the economy will have its stable equilibrium at full employment level. Thus wage flexibility will automatically bring back the economy to

the level of full employment where there is no involuntary unemployment.

Money Market (Quantity Theory of Money)

One of the important features of the classical system is the well known quantity theory of money. According to the quantity theory of money, the price level is a function of money supply. Changes in the price level are directly proportional to changes in the quantity of money. This functional relationship between the price level and supply of money can be algebraically put as

$$MV = PQ$$

i.e., supply of money = demand for money

The equality between MV and PQ refers to an equilibrium situation where the demand for money is equal to supply of money. In other words, it implies that entire amount of money is spent on the purchase of goods and services. Assuming the magnitudes of velocity (V) and output (Q) as constant, at least in the short run, any additional amount of money will raise the price level in a direct proportionate manner. Suppose the economy is in full employment and if at this position the supply of money increases by 15%, the price level would also rise

by 15%. Thus the changes in the supply of money cause similar changes in the price level.

Goods Market (Savings and Investment in the classical system)

The goods market is in a state of equilibrium when saving and investment are equal or the aggregate demand for goods just equals the aggregate supply. If the amount of saving exceeds investment or the aggregate supply is greater than aggregate demand, the level of income in the community will have a tendency to decline. On the opposite, if the volume of investment exceeds savings, or, the aggregate demand for goods is greater than their aggregate supply, the level of income tends to expand.

The Classical system postulates both saving and investment as the function of rate of interest and gives the following goods market relationships

$$S = f (r) \text{ ----- Savings function}$$

$$I = f (r) \text{ ----- Investment function}$$

$$S = I \text{ -----Equilibrium in the goods market}$$

Saving is assumed as a direct function of the rate of interest and investment as an inverse function of the rate of interest. Equilibrium represents the equilibrium condition in the goods market. In the classical goods

market, the equilibrating mechanism of the rate of interest always ensures savings and investment equality.

The Quantity Theory of Money

To understand the determination of the price level in the classical system, we analyze the role of money. In the classical theory, the quantity of money determines aggregate demand, which in turn determines the price level.

Fisher's Quantity Theory of Money: The Transaction Approach (THE EQUATION OF EXCHANGE)

Irving Fisher presented his transaction version of quantity theory of money in his famous book 'The Purchasing Power of Money' published in 1911. In his theory, he establishes a direct and proportionate relationship between the changes in the quantity of money and the resultant price level. This basic proposition is established by Fisher in his equation of exchange which is

$$MV=PT$$

Where; M represents the total quantity of money in circulation

V ▶ indicates the velocity of circulation of money.
i.e., the average number of times the money is spent on the purchase of goods and services

P ▶ represents the general price level or average price per unit of T

T ▶ represents the total volume of transactions against money

Prof. Fisher's theory is based on an essential function of money, namely, that money is a medium of exchange. It is not needed for its own sake, but to exchange for goods and services

The above equation has two sides, namely MV and PT . The MV , the product of M and V on the left hand side of the equation of exchange gives the aggregate effective supply of money or total money expenditure during a given period of time. M is the total quantity of money in existence at a moment of time. But the supply of money over a period of time is the total quantity of money (M) multiplied by the velocity of its circulation (V).

PT , the product of P and T on the right hand side of the equation of exchange represents the money value of all goods and services bought during a given period of time. It indicates the total demand for money. The demand for money is equal to the total value of all goods and

services transacted during a given period of time. It is indicated by PT. Fisher pointed out that in a country, during any given period of time, the total quantity, during any given period of time, the total quantity of money (i.e., MV) will be equal to the total value of all goods and services bought and sold (i.e., PT)

Hence, MV (supply of money) = PT (Demand for money)

The above equation is referred to as the 'Cash Transaction Equation'. It could also be expressed as

$$P = \frac{MV}{T}$$

This equation implies that the quantity of money determines the price level; the price level varies directly with the quantity of money, provided V and T remains constant.

In the above equation of exchange only primary money or currency money has been included. But money in the modern economy includes banks' demand deposits or credit. It was on account of the growing importance of bank deposits or credit money, Fisher later on modified his equation of exchange to include credit money. The modified form of equation of exchange presented by Fisher is in the form

$$MV + M'V' = PT$$

$$P = \frac{MV + M'V'}{T}$$

Where, $M \rightarrow$ represents the total amount of credit money or bank money

$V' \rightarrow$ velocity of circulation of credit money

From the above equation, it is evident that the price level is determined by the M, M', V, V' & T . and price level is directly related to M, V, M' & V' . It is inversely related to T .

The basic proposition which Prof. Irving Fisher establishes in his equation of exchange is that the price level or the value of money is a function of the supply of money, provided other variables M', V & V' remain constant. Then P will change in direct proportion to M . Prof. Fisher thus established a direct and proportionate relationship between the changes in the quantity of money and the resultant price level.

The equation of exchange is a truism and does not explain the variables it contains. Fisher and other quantity theorists, however, postulated that the *equilibrium* values of the elements in the equation of exchange, with the exception of the price level, are determined by other forces. Thus, the equation of exchange determines the price level. As Fisher put it:

“We find that, under the conditions assumed, the price level varies (1) directly as the quantity of money in circulation (M), (2) directly as the velocity of its circulation (V), (3) inversely as the volume of trade done by it (T). The first of these three relations is worth emphasis. It constitutes the “quantity theory of money.”

Assumptions of Fisher’s Equation of Exchange.

Fisher’s equation of exchange is based on the following assumptions.

1. The price level P is a passive element in the equation of exchange

‘ P ’ is affected by other factors in the equation but does not affect those factors, P is purely an inactive element. P is the resultant and not the cause. The relationship between P and other factors in the equation is one-sided. In the words of Fisher, “The price level is normally the one absolutely passive element in the equation of exchange. It is controlled solely by other elements but exerts no control over them”

2. The volume of trade (T) is an independent and constant element in the equation of exchange. It is independent of other factors such as M , M' , V and V'

Fisher assumes the volume of trade to be an independent factor in his equation of exchange. According to Fisher, T is not affected by any change of other elements in the equation of exchange say M , V , M' and V' . It is independent of these elements. On the contrary, T is determined by certain outside factors such as natural resources, climatic condition, population, technique of production etc. which do not change in the short period. Hence, T is not subjected to rapid fluctuations. T remains constant is also based on other assumption which lies implicit in the equation of exchange. The assumption is that there exists full-employment of resources in the economy. Fisher therefore assumes T to be constant

3. The velocity of circulation of money (V) is an independent and constant element in the equation of exchange

Fisher assumed that V is independent and is not affected by changes in M or P . and change in M or P has no effect on V , for V depends on external factors such as commercial customs of the country, banking habits of the people, trade activities, interest rates, facilities for investment etc. Since these factors do not change in the short period, V may be taken to be more or less constant

during this period. Thus change in M will have no effect on V , similarly, V' too would not be affected by M

4. The ratio of credit money (M') to legal tender money (M) remains constant.

Fisher assumes that the ratio of credit or bank money to legal tender money remains constant. In the words of Fisher, "Under any given conditions of industry and civilizations, deposits tend to hold a fixed normal ratio to money in circulation". Thus, the inclusion of M' does not normally disturb the quantitative relation between M and P .

5. The supply of money is assumed as an exogenously determined constant.
6. The theory is applicable in the long-run
7. It is based on the assumption of the existence of full-employment in the economy

Criticisms of the Fisher's Equation of Exchange

1. Quantity Theory of Money is based on unrealistic assumptions
2. The theory offers us a long-term analysis of the value of money and it ignores the short period. But

in reality, people are more interested in the short period.

3. The Quantity Theory does not tell us precisely how changes in money supply influence the price level.
4. In actual life, there is no direct and proportional relationship between the quantity of money and the price level.
5. The Quantity Theory is based on wrong assumptions of full employment
6. This theory of money is not comprehensive. The theory assumes that there is no hoarding of money and that people spend immediately whatever they earn. This is indeed a very serious handicap.
7. The Quantity Theory does not furnish a comprehensive explanation of price changes.
8. According to critics, the theory is incomplete and one-sided as it introduces only transactions approach of the demand for money. It neglects the store of value function of money

9. The Theory is mechanical and neglects the human element in the analysis of price changes.
10. The theory ignores the rate of interest as determinant of the price level.
11. The Fisher's theory offers no discussion on the velocity of circulation of money and it is difficult to measure the velocity of circulation of money
12. The theory offers no explanation of cyclical fluctuations in prices.
13. According to Prof. Nicholson, this theory expresses only an elementary truth with which most of us are familiar. It tells us nothing new, therefore, it is not proper to call this as a theory
14. The quantity theory does not take into account the effect of changes in the price level.
15. The theory neglects the real balance effect of money.

It is true that the theory is subjected to lots of criticism, yet as an expression of a tendency, the theory is perfectly all right and the theory occupies an important place in economics

The Cambridge Version of Quantity Theory of Money: The Cash-Balance Approach

The Cambridge Version of the quantity theory of money was first developed by the great Cambridge economist Alfred Marshall. It was later modified by his followers A.C Pigou, D.H Robertson, and J.M. Keynes, all at Cambridge University. That is why this version of quantity theory of money is known as Cambridge Version. It is also often referred to

According to Marshall, the total demand for money is a function of the annual income and the size of assets and the demand function for money can be expressed as

$$M = KY + K'A$$

Where M is the total supply of money which consists of currency and demand deposits with the banks; Y is the money income; K is that proportion of money income which the people intend to hold in the form of cash; A is the money value of the assets or wealth; and K' is proportion of the total assets which people intend to hold in form of cash.

The above Marshallian equation came to be modified at the hands of the successors of Marshall, when they dropped the assets part of the equation and re-stated the money demand function as

$$M = KY$$

The money income of the community is equal to the value of the total output, that is

$$Y = P.O$$

Substituting Y in the equation, it can be stated as

$$M = KPO$$

The Marshallian cash balance approach was further developed by A.C. Pigou and it was expressed as

$$P = KR/M$$

Where P represents purchasing power of the value of money, which is the reciprocal of P in Fisher's equation. R represents total real income, K stands for the proportion of real income that the people hold in the form of cash and M represents the number of units of legal tender.

Another noted advocate of the Cambridge approach is D.H. Robertson. He gave the following cash balance equation:

$$M = KTP \text{ or } P = M/KT$$

Where P is the price level, M is the supply of money and T is the amount of goods and services which is to be purchased during a year and K is the fraction of T

over which people want to hold command in the form of cash balance.

Features of Cash-Balance Approach

The important features of neo-classical monetary theory is summarized as follows

1. Unlike Fisher's transaction equation, neo-classical monetary theory links prices to the demand for money, not the supply of money, because idle cash balances does not in reality create demand and affect prices.
2. Cambridge equation links demand for money to money income. In other words, it hypothesizes that demand for money is a function of money income
3. By linking prices to demand for money, Cambridge version of monetary theory brings out the mechanism by which change in the demand for money affects the general price level
4. According to Fisher, the demand for money serves as a medium of exchange. The Cambridge economists, on the contrary consider the demand for money as arising from its function as a store of value

5. The cash-balance approach considers the demand for and supply of money at a particular point of time rather than over a period of time. The supply of money according to them is its stocks at a particular point of time rather than its flow over a given period of time

Criticism of the Cash-Balance Approach

The various Cambridge equations under cash-balance approach suffer from the following defects and shortcomings

1. The cash-balance theory does not discuss the demand for money in its entirety. The theory does not analyse all the determinants of demand for money. In particular, the cash-balance theory does not discuss the speculative motive for holding money.
2. A serious defect in the Cambridge equations is that they seek to explain the purchasing power in terms of consumption goods only. In the actual market, there are not only consumption goods but also investment goods.
3. Cash-Balance theory is based on the assumption that the demand for money has uniform unitary elasticity or the demand for money is unity.

4. The cash-balance theory has taken a narrow view of 'k'. This theory has assigned an unduly large weight to real income as the sole determinant of 'k'.
5. According to the theory, k determines the price level. The larger the cash holding (demand for money), lower shall be the price level. 'k' thus, exerts its influence on 'p'. but 'k' is inturn influenced by 'p'
6. It is difficult to have an accurate measurement of the real income of the country.
7. Cambridge equation assumed 'k' and T as given. In a dynamic setup, neither 'k' nor T could be assumed constant.
8. Cash-balance theory does not offer a comprehensive treatment of the various forces which lead to changes in the price level. For example, rate of interest is an important determinant of prices. But it does not figure at all in the cash-balance approach.
9. It is difficult to visualize in terms of the cash-balance approach the extent to which prices and output will change consequent upon a given

change in the supply of money. The theory lacks quantitative exactness.

10. The theory neglects important factors such as income, saving and investment which according to present day economists have an important bearing on the price level of the country.
11. The cash-balance theory ignores those bank deposits which come into existence consequent upon the lending operations of the commercial banks

Despite the above defects, and shortcomings, the cash-balance theory is not entirely useless. The great merit of this theory lies in the fact that it has emphasized the importance of the demand for money as the main determinant of the value of money.

Comparison of Fisher's Transaction Approach and Cash-Balance Approach

There are similarities as well as dissimilarities between the two versions of the quantity theory of money.

Similarities

The important similarities between the two approaches are

1. Both the approaches to the quantity theory of money lead to the same destination, namely, the price level or the value of money depends upon the quantity of money
2. M in Fisher's equation as well as Cash-balance equation refer to the same thing namely, the total quantity of money.
3. The cash-balance equation of Robertson, $P = \frac{M}{kT}$ closely resembles the Fisher's equation of $P = \frac{MV}{T}$. the symbols in the two equations convey almost the same meaning. The only difference relate to V and k. But, even V and k tend to be the reciprocals of each other. In other words, $k = \frac{1}{V}$, while $V = \frac{1}{k}$. There is no fundamental difference between the two equations. By substituting $\frac{1}{k}$ for V in the Fisher's equation $MV = PT$, we arrive at $M = kPT$ which is nothing but the Cambridge equation. By substituting $\frac{1}{V}$ for k in the Cambridge equation $M = kPT$, we arrive at $MV = PT$ which is simply Fisher's equation.

Dissimilarities

Though the two approaches have some similarities, both are different. The differences between the two versions of the quantity theory of money are as follows.

1. 'P' in the Fisher's equation is not identical with 'P' in the Cambridge equation. In the Fisher's equation, 'P' refers to the general price level. But the price level in the Cambridge equation relates only to the prices of consumption goods.
2. The Fisher's version stresses the medium of exchange function of money, while the Cambridge version stresses the store of value function of money.
3. Fisher's equation emphasises the importance of velocity of circulation of money (V), while the Cambridge version emphasises that part of the community's income which is held in the form of cash balances (k)
4. Fisher's equation presents money as a flow concept, while Cambridge equation present money as a stock concept.
5. Fisher's equation explains the value of money over a period of time, while the Cambridge equation explains the value of money at a particular point of time.

6. Nature of money has been interpreted differently by the two approaches. Fisher's approach stresses the spending of money on goods and services and the Cambridge approach emphasizes the holding of money by the people.

Superiority of Cash Balance Approach over Cash transaction approach

The Cambridge version of the quantity theory of money is superior to the Fisher's version on the following grounds.

1. The Fisher's version is mechanical while the Cambridge version is more realistic. Fisher's version is mechanical in the sense that it treats price level as the exclusive function of the quantity of money in circulation. This version accords no place to human motives as the determinants of price level. The Cambridge version by emphasizing 'k' brings human motives as important factors determining the price level.
2. Fisher's version is incomplete because it considers quantity of money in circulation to be the determinant of price level or the value of money. The Cambridge version on the contrary considers

both the supply as well as the demand for money as the real determinants of the value of money. Thus, the Cambridge version is more comprehensive.

3. The Cambridge version is wider and more comprehensive than the Fisher's version. It takes into account the income level as well as the changes in it as an important determinant of price level. The Fisher's version neglected income level as a determinant of the price level.
4. The Cambridge equation $P = \frac{M}{kT}$ is more valuable than the Fisher's equation $P = \frac{MV}{T}$ while explaining the value of money. The reason is being that it is easier to know the cash balance of the individual than to gain information about the expenditure on various types of transaction.
5. The symbol 'k' in the Cambridge version proves to be a better tool in the analysis of cyclical fluctuations than V in Fisher's equation.
6. The Cambridge version is more realistic than the Fisher's version because the former stresses subjective factors as the main determinants of the demand for money. The Fisher's version takes into

account purely objective factors while discussing the demand for money

7. Lastly, the Cambridge version of the quantity theory has provided the foundation for the building up of the Keynesian liquidity preference theory of interest

It is on these grounds that the Cambridge version enjoys a superiority over the Fisher's approach to the quantity theory.

General equilibrium analysis or Classical theory of Employment and Output Determination

The Classical economists disagreed with the Mercantilist view who emphasized State interference and money factors, for the determination of real variables like output and employment.

According to Adam Smith, "it is the real factor which is more important." Money was used only as a medium of exchange.

Assumptions

1. Long –Run Analysis
2. Full Employment

3. No State Interference

4. Price Mechanism

5. State of Technology and population is constant

The Classical model of employment consists of 2 components:

I. Aggregate Production Function:

Production function shows the relationship between input and output. Assume there are two inputs—Labour and capital. Due to the assumption of short-run, output will be a function of Labour (N) with capital constant (K), that is, output can be increased only by increasing the variable factor (N) with fixed factor (K) constant.

$$Y = F(K, N) \dots(2.1)$$

Where $K \rightarrow$ Constant capital stock

$N \rightarrow$ Quantity of homogeneous Labour Input

$Y \rightarrow$ Real Output.

II. Labour supply and demand function:

With the help of these two functions output and employment is determined. As capital is constant in the short-run, output will change only with change in the labour input.

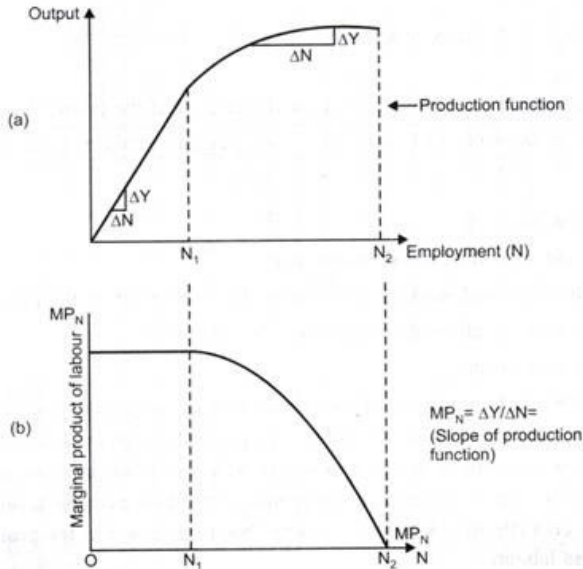


FIG. 2.1(A): PRODUCTION FUNCTION AND (B) MP OF LABOUR CURVE

As MPN represents addition to output when the Labour input is increased, MPN curve represents the slope of production function.

$$MPN = \Delta Y / \Delta N$$

The slope of the production function (MPN) is positive but decreases as we move along the curve.

Characteristics of Production Function:

In short run, production function shows technological relationship between the output level (Y) and the level of employment (N).

1. At low level of Labour input before N1

The Production function is a straight line which exhibits constant returns to scale.

Therefore, MPN curve is flat which represents constant MPN.

It shows at very low level of output as we employ more labour to the given capital, productivity of the last worker added does not fall.

Therefore, MPN does not fall.

2. After N_1 , till N_2

As we add more labour, output increases but at a decreasing rate (i.e., increment to the output decreases) MPN decreases but is positive.

3. Beyond N_2

The additional Labour employed will not lead to additional production/ output i.e, $MPN = 0$.

Therefore, MPN curve touches X-axis at N_2 .

Employment:

The Amount of Labour employed will be determined at the point where: Aggregate Demand for Labour (N_d) = Aggregate Supply of Labour (N_s)

Assumptions:

1. Market works well.
2. Firms and individual workers optimize.
3. Both the firms and workers have perfect knowledge about the prices.
4. Money wage is adjusted automatically by the market.

5. Perfect competition.

II. (a) Demand for Labour:

Demand for labour is negatively related to the real wages (W/P). This is because real wages are the cost of production for the firms. Therefore, an increase in real wages due to increase in wages will lead to an increase in the cost of production. This in turn will decrease the profits of the firm because profit is equal to Revenue minus cost ($\text{Profit} = \text{Revenue} - \text{Cost}$). Due to decrease in the profit level, firm will demand less labour.

Derivation of demand curve for labour :

Firms will choose that output which will maximise their profit. Firms will increase the output till:

$$\boxed{MC = MR}$$

Under Perfect Competition $MR = P$

$$\therefore \boxed{MC = P} \quad \dots(2.2)$$

As Labour is the only variable factor of production.

\therefore MC is the Marginal Labour Cost (MFC).

Where $MFC = \frac{W}{MP_N}$ where $W \rightarrow$ Money Wage

$$\therefore MC = P \quad \dots\text{from (2.2)}$$

$$\therefore P = \frac{W}{MP_N}$$

or $\boxed{\frac{W}{P} = MP_N}$ \leftarrow Profit maximising output $\dots(2.3)$

where $\frac{W}{P}$ is the real wage.

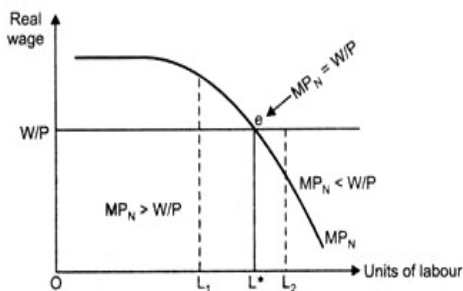


FIG. 2.2: LABOUR DEMAND CURVE FOR A FIRM

The firm maximises its profit by :

employing OL^* Labour as here $MP_N = W/P$

If it employs less than OL^* e.g. OL_1

$$MP_N > W/P$$

The firm can increase its profit by hiring additional labour.

If it employs more than OL^* e.g. OL_2

$$MP_N < W/P$$

The firm can increase its profit by decreasing the number of Labour employed.

Thus, $\boxed{MP_N}$ is the Demand Curve for Labour

As MP_N is downward sloping, it implies demand for labour depends inversely on the level of real wage. Greater is $\frac{W}{P}$, lesser is the number of labour employed.

Aggregate Demand for Labour (Nd):

It is a horizontal summation of individual firm's demand curve for Labour. Aggregate demand for labour is negatively related to the real wages (W/P)

$ND = f(W/P)$ (Aggregate labour demand function) ... (2.4)

II. (b) Supply of Labour:

Supply of labour is positively related to the real wages (W/P). This is because wages are the income of the labourer. Increase in wages implies increase in income, therefore, a labourer is willing to work more at higher wages. Thus, the supply curve of labour is positively sloped.

Derivation of supply curve of labour:

Labour supply curve is derived from the income-leisure trade-off curve which shows the trade-off between leisure and work.

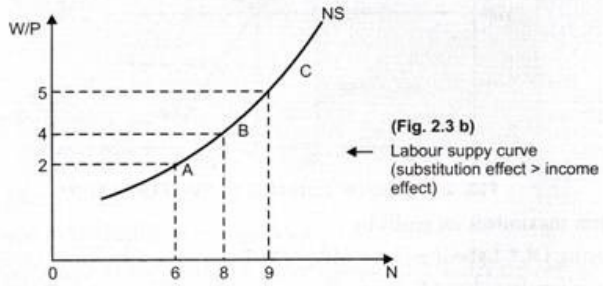
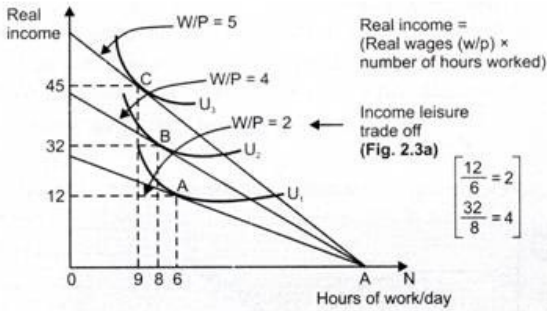


FIG. 2.3: INDIVIDUAL LABOUR SUPPLY DECISION

At lower income level, labour prefers work to leisure → Substitution Effect (SE) > Income Effect (IE)

At ‘extremely’ higher income level, labour prefers leisure to work → IE > SE. Thus, we get backward bending supply curve of labour.

However ‘extremely’ high wages are rare. Therefore, it is assumed that the Aggregate labour supply curve has a positive slope. SE is strong enough to offset the IE. (SE > IE)

Aggregate Supply Curve of Labour (Ns):

It is a horizontal summation of all individual labour supply curves. It gives the total labour supplied at each level of real wages. It is positively related to the real wages.

$$N^s = f(W/P) \leftarrow \text{Aggregate labour supply function} \quad \dots(2.5)$$

Equilibrium output and employment:

$$Y = F(\bar{K}, N) \leftarrow \text{Aggregate production function} \quad \dots(2.1)$$

$$N^d = f(W/P) \leftarrow \text{Aggregate labour demand function} \quad \dots(2.4)$$

$$N^s = f(W/P) \leftarrow \text{Aggregate labour supply function} \quad \dots(2.5)$$

Equilibrium in Labour Market: In the Classical model output and employment are simultaneously determined. It is determined where

Aggregate demand for labour = Aggregate supply of labour, that is, where:

$$N^d = N^s \quad \dots(2.6)$$

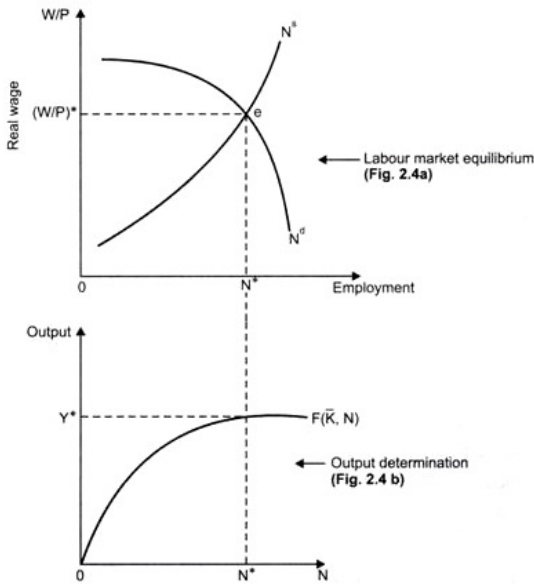


FIG. 2.4 (A): CLASSICAL OUTPUT AND (B) EMPLOYMENT DETERMINATION.

Therefore, Equilibrium level of employment $\rightarrow N^*$, as here $N_d = N_s$ shown by point 'e'
 Real wage $\rightarrow (W/P)^*$ (Fig. 2.4a)

Equilibrium level of output $\rightarrow Y^*$ (Fig. 2.4b)

Thus, Y^* is the full employment level.

Note: In the classical model \rightarrow The endogenous variables are Output, Employment, Real Wage (they are determined within or by the model).

It is the exogenous variable (determined outside the model) which leads to changes in output and employment. The factors which are operating on the supply side determine the level of output and employment. Thus, it is the supply of labour which plays an important role in the determination of labour market equilibrium and thus the employment and output level.

Conclusion:

Thus, in the classical model the factors that determine the output and employment are the factors which determine the positions of:

- (a) Labour supply curve,
- (b) Labour demand curve, and
- (c) Aggregate Production Function.

The Classical Theory of Employment: Assumption and Criticism

John Maynard Keynes in his *General Theory of Employment, Interest and Money* published in 1936, made

a frontal attack on the classical postulates. He developed a new economics which brought about a revolution in economic thought and policy.

The General Theory was written against the background of classical thought. By the “classicists” Keynes meant “the followers of Ricardo, those, that is to say, who adopted and perfected the theory of Ricardian economics.” They included, in particular, J.S. Mill, Marshall and Pigou.

Keynes repudiated traditional and orthodox economics which had been built up over a century and which dominated economic thought and policy before and during the Great Depression. Since the Keynesian Economics is based on the criticism of classical economics, it is necessary to know the latter as embodied in the theory of employment

1. The Classical Theory of Employment:

The classical economists believed in the existence of full employment in the economy. To them, full employment was a normal situation and any deviation from this regarded as something abnormal. According to Pigou, the tendency of the economic system is to automatically provide full employment in the labour market when the demand and supply of labour are equal.

Unemployment results from the rigidity in the wage structure and interference in the working of free market system in the form of trade union legislation, minimum wage legislation etc. Full employment exists “when everybody who at the running rate of wages wishes to be employed.”

Those who are not prepared to work at the existing wage rate are not unemployed because they are voluntarily unemployed. Thus full employment is a situation where there is no possibility of involuntary unemployment in the sense that people are prepared to work at the current wage rate but they do not find work.

The basis of the classical theory is Say’s Law of Markets which was carried forward by classical economists like Marshall and Pigou. They explained the determination of output and employment divided into individual markets for labour, goods and money. Each market involves a built-in equilibrium mechanism to ensure full employment in the economy.

It’s Assumptions:

The classical theory of output and employment is based on the following assumptions:

1. There is the existence of full employment without inflation.

2. There is a laissez-faire capitalist economy without government interference.
3. It is a closed economy without foreign trade.
4. There is perfect competition in labour and product markets.
5. Labour is homogeneous.
6. Total output of the economy is divided between consumption and investment expenditures.
7. The quantity of money is given and money is only the medium of exchange.
8. Wages and prices are perfectly flexible.
9. There is perfect information on the part of all market participants.
10. Money wages and real wages are directly related and proportional.
11. Savings are automatically invested and equality between the two is brought about by the rate of interest
12. Capital stock and technical knowledge are given.
13. The law of diminishing returns operates in production.
14. It assumes long run.

It's Explanation:

The determination of output and employment in the classical theory occurs in labour, goods and money markets in the economy.

Say's Law of Markets:

Say's law of markets is the core of the classical theory of employment. An early 19th century French Economist, J.B. Say, enunciated the proposition that "supply creates its own demand." Therefore, there cannot be general overproduction and the problem of unemployment in the economy.

If there is general overproduction in the economy, then some labourers may be asked to leave their jobs. The problem of unemployment arises in the economy in the short run. In the long run, the economy will automatically tend toward full employment when the demand and supply of goods become equal.

When a producer produces goods and pays wages to workers, the workers, in turn, buy those goods in the market. Thus the very act of supplying (producing) goods implies a demand for them. It is in this way that supply creates its own demand.

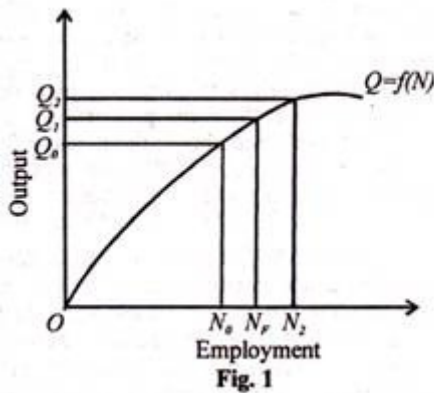
Determination of Output and Employment:

In the classical theory, output and employment are determined by the production function and the demand for labour and the supply of labour in the economy. Given the capital stock, technical knowledge and other factors, a precise relation exists between total output and amount of

employment, i.e., number of workers. This is shown in the form of the following production function: $Q=f(K, T, N)$ where total output (Q) is a function (f) of capital stock (K), technical knowledge (T), and the number of workers (N)

Given K and T, the production function becomes $Q = f(N)$ which shows that output is a function of the number of workers. Output is an increasing function of the number of workers, output increases as the employment of labour rises. But after a point when more workers are employed, diminishing marginal returns to labour start.

This is shown in Fig. 1 where the curve $Q = f(N)$ is the production function and the total output OQ_1 corresponds to the full employment level NF . But when more workers N_1N_2 are employed beyond the full employment level of output OQ_1 , the increase in output Q_1Q_2 is less than the increase in employment N_1N_2 .



Labour Market Equilibrium:

In the labour market, the demand for labour and the supply of labour determine the level of output and employment. The classical economists regard the demand for labour as the function of the real wage rate: $DN = f(W/P)$

Where DN = demand for labour, W = wage rate and P = price level. Dividing wage rate (W) by price level (P), we get the real wage rate (W/P).

The demand for labour is a decreasing function of the real wage rate, as shown by the downward sloping DN curve in Fig. 2. It is by reducing the real wage rate that more workers can be employed.

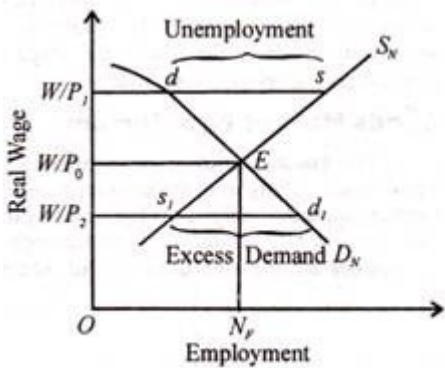


Fig. 2

The supply of labour also depends on the real wage rate: $SN = f(W/P)$, where SN is the supply of labour. But it is an increasing function of the real wage rate, as shown by the upward sloping SN curve in Fig. 2. It is by

increasing the real wage rate that more workers can be employed.

When the DN and SN curves intersect at point E, the full employment level NF is determined at the equilibrium real wage rate W/P_0 . If the wage rate rises from W/P_0 to W/P_1 the supply of labour will be more than its demand by ds .

Now at W/P_1 wage rate, ds workers will be involuntary unemployed because the demand for labour (W/P_1-d) is less than their supply (W/P_1-s). With competition among workers for work, they will be willing to accept a lower wage rate. Consequently, the wage rate will fall from W/P_1 to W/P_0 .

The supply of labour will fall and the demand for labour will rise and the equilibrium point E will be restored along with the full employment level N_r . On the contrary, if the wage rate falls from W/P_0 to W/P_2 the demand for labour (W/P_2-d_1) will be more than its supply (W/P_2-s_1). Competition by employers for workers will raise the wage rate from W/P_2 to W/P_0 and the equilibrium point E will be restored along with the full employment level NF.

Wage Price Flexibility:

The classical economists believed that there was always full employment in the economy. In case of unemployment, a general cut in money wages would take the economy to the full employment level. This argument is based on the assumption that there is a direct and proportional relation between money wages and real wages.

When money wages are reduced, they lead to reduction in cost of production and consequently to the lower prices of products. When prices fall, demand for products will increase and sales will be pushed up. Increased sales will necessitate the employment of more labour and ultimately full employment will be attained.

Pigou explains the entire proposition in the equation: $N = qY/W$. In this equation, N is the number of workers employed, q is the fraction of income earned as wages, Y is the national income and W is the money wage rate. N can be increased by a reduction in W . Thus the key to full employment is a reduction in money wage. When prices fall with the reduction of money wage, real wage is also reduced in the same proportion.

As explained above, the demand for labour is a decreasing function of the real wage rate. If W is the money wage rate, P is the price of the product, and MPN

is the marginal product of labour, we have $W = P \times MPN$
 or $W/P = MPN$

Since MPN declines as employment increases, it follows that the level of employment increases as the real wage (W/P) declines. This is explained in Figure 3. In Panel (A), SN is the supply curve of labour and DN is the demand curve for labour. The intersection of the two curves at E shows the level of full employment N_f and the real wage W/P_0 .

If the real wage rises to W/P_1 , supply exceeds the demand for labour by sd and N_1N_2 workers are unemployed. It is only when the wage is reduced to W/P_0 that unemployment disappears and the level of full employment is attained.

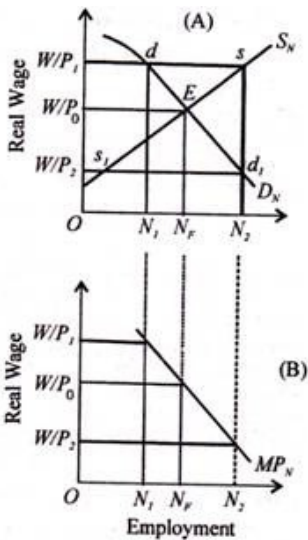


Fig. 3

This is shown in Panel (B), where MPN is the marginal product of labour curve which slopes downward as more labour is employed. Since every worker is paid wages equal to his marginal product, therefore the full employment level NF is reached when the wage rate falls from W/P_1 to W/P_0 .

Contrariwise, with the fall in the wage from W/P_0 to W/P_2 , the demand for labour increases more than its supply by s_1d_1 , the workers demand higher wage. This leads to the rise in the wage from W/P_2 to W/P_0 and the full employment level NF is attained.

Goods Market Equilibrium:

The goods market is in equilibrium when saving equals investment. At that point of time, total demand equals total supply and the economy is in a state of full employment. According to the classicists, what is not spent is automatically invested.

Thus saving must equal investment. If there is any divergence between the two, the equality is maintained through the mechanism of the rate of interest. To them, both saving and investment are the functions of the interest rate.

$$S=f(r) \dots(1)$$

$$I=f(r) \dots(2)$$

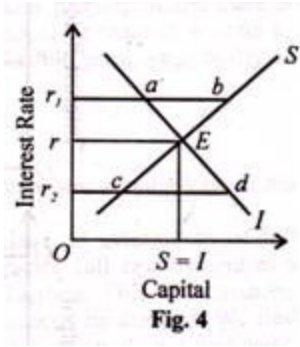
$$S = I$$

Where S = saving, I = investment, and r = interest rate.

To the classicists, interest is a reward for saving. The higher the rate of interest, the higher the saving, and lower the investment. On the contrary, the lower the rate of interest, the higher the demand for investment funds, and lowers the saving. If at any given period, investment exceeds saving, ($I > S$) the rate of interest will rise.

Saving will increase and investment will decline till the two are equal at the full employment level. This is because saving is regarded as an increasing function of the interest rate and investment as a decreasing function of the rate of interest.

Assuming interest rates are perfectly elastic, the mechanism of the equality between saving and investment is shown in Figure 4 where S is the saving curve and I is the investment curve. Both intersect at E which is the full employment level where at Or interest rate $S = I$. If the interest rate rises to Or1 saving is more than investment by ha which will lead to unemployment in the economy.



Since $S > I$, the investment demand for capital being less than its supply, the interest rate will fall to Or , investment will increase and saving will decline. Consequently, $S = I$ equilibrium will be re-established at point E .

On the contrary, with a fall in the interest rate from Or to Or_2 investment will be more than saving ($I > S$) by cd , the demand for capital will be more than its supply. The interest rate will rise, saving will increase and investment will decline. Ultimately, $S = I$ equilibrium will be restored at the full employment level E .

Money Market Equilibrium:

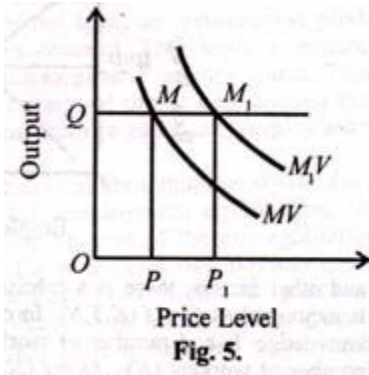
The money market equilibrium in the classical theory is based on the Quantity Theory of Money which states that the general price level (P) in the economy depends on the supply of money (M). The equation is $MV = PT$, where M = supply of money, V = velocity of

circulation of M, P = Price level, and T = volume of transaction or total output.

The equation tells that the total money supply MV equals the total value of output PT in the economy. Assuming V and T to be constant, a change in the supply of money (M) causes a proportional change in the price level (P). Thus the price level is a function of the money supply: $P = f(M)$.

The relation between quantity of money, total output and price level is depicted in Figure 5 where the price level is taken on the horizontal axis and the total output on the vertical axis. MV is the money supply curve which is a rectangular hyperbola.

This is because the equation $MV = PT$ holds on all points of this curve. Given the output level OQ, there would be only one price level OP consistent with the quantity of money, as shown by point M on the MV curve. If the quantity of money increases, the MV curve will shift to the right as M₁V curve.



As a result, the price level would rise from OP to OP_1 given the same level of output OQ . This rise in the price level is exactly proportional to the rise in the quantity of money, i.e., $PP_1 = MM_1$ when the full employment level of output remains OQ .

Summary of classical Macroeconomics

The classical theory of employment was based on the assumption of full employment where full employment was a normal situation and any deviation from this was regarded as an abnormal situation. This was based on Say's Law of Market.

According to this, supply creates its own demand and the problem of overproduction and unemployment does not arise. Thus there is always full employment in the economy. If there is overproduction and unemployment, the automatic forces of demand and supply in the market will bring back the full employment level.

In the classical theory, the determination of output and employment takes place in labour, goods and money markets of the economy, as shown in Fig. 6. The forces of demand and supply in these markets will ultimately bring full employment in the economy.

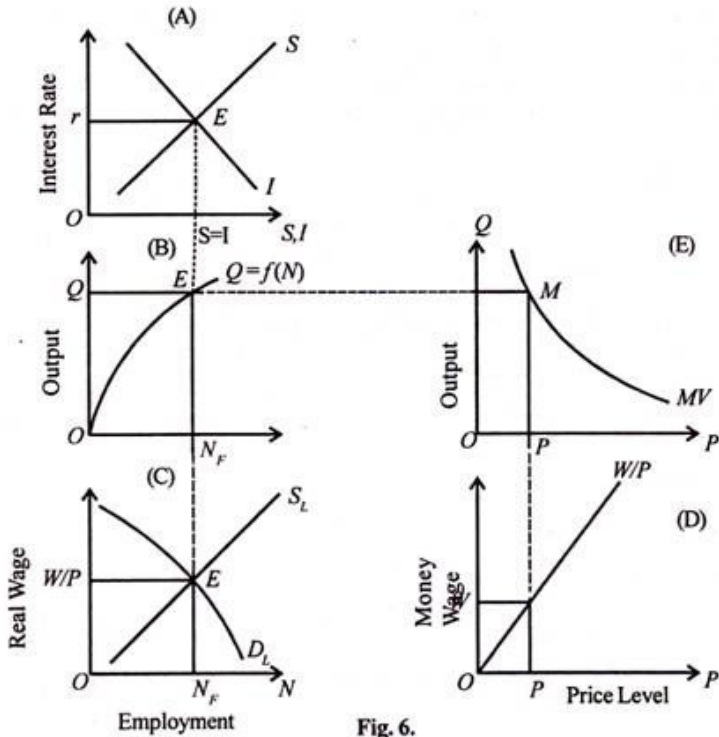


Fig. 6.

In the classical analysis, output and employment in the economy are determined by the aggregate production function, demand for labour and supply of labour. Given the stock of capital, technical knowledge and other factors,

there is a precise relation between total output and employment (number of workers).

This is expressed as $Q = f(K, T, N)$. In other words, total output (Q) is a function (f) of capital stock (K), technical knowledge T, and number of workers (TV). Given K and T, total output (Q) is an increasing function of the number of workers (N): $Q=f(N)$ as shown in Panel (B). At point E, ONF workers produce OQ output. But beyond point E, as more workers are employed, diminishing marginal returns start.

Labour Market Equilibrium:

In the labour market, the demand for and supply of labour determine output and employment in the economy. The demand for labour depends on total output. As production increases, the demand for labour also increases.

The demand for labour, in turn, depends on the marginal productivity (MP) of labour which declines as more workers are employed. The supply of labour depends on the wage rate, $SL = f(W/P)$, and is an increasing function of the wage rate.

The demand for labour also depends on the wage rate, $DL =f(W/P)$, and is a decreasing function of the wage rate. Thus both the demand for and supply of labour

are the functions of real wage rate (W/P). The intersection point E of DL and SL curves at W/P wage rate in Panel (C) of the figure determines the full employment level ONF.

Goods Market Equilibrium:

In the classical analysis, the goods market is in equilibrium when saving and investment are in equilibrium ($S=I$). This equality is brought about by the mechanism of interest rate at the full employment level of output so that the quantity of goods demanded is equal to the quantity of goods supplied. This is shown in Panel (A) of the figure where $S=I$ at point E when the interest rate is Or.

Money Market Equilibrium:

The money market is in equilibrium when the demand for money equals the supply of money. This is explained by the Quantity Theory of Money which states that the quantity of money is a function of the price level, $P=f(MV)$. Changes in the general price level are proportional to the quantity of money.

The equilibrium in the money market is shown by the equation $MV = PT$ where MV is the supply of money and PT is the demand for money. The equilibrium of the

money market explains the price level corresponding to the full employment level of output which relates Panel (E) and Panel (B) with MQ line.

The price level OP is determined by total output (Q) and the quantity of money (MV), as shown in Panel (E). Then the real wage corresponding with the money wage is determined by the (W/P) curve, as shown in Panel (D).

When the money wage increases, the real wage also increases in the same proportion and there is no effect on the level of output and employment. It follows that the money wage should be reduced in order to attain the full employment level in the economy. Thus the classicists favoured a flexible price-wage policy to maintain full employment.

Keynes criticism of classical theory

Keynes vehemently criticized the classical theory of employment for its unrealistic assumptions in his General Theory.

(1) Underemployment Equilibrium:

Keynes rejected the fundamental classical assumption of full employment equilibrium in the economy. He considered it as unrealistic. He regarded full

employment as a special situation. The general situation in a capitalist economy is one of underemployment.

This is because the capitalist society does not function according to Say's law, and supply always exceeds its demand. We find millions of workers are prepared to work at the current wage rate, and even below it, but they do not find work.

Thus the existence of involuntary unemployment in capitalist economies (entirely ruled out by the classicists) proves that underemployment equilibrium is a normal situation and full employment equilibrium is abnormal and accidental.

(2) Refutation of Say's Law:

Keynes refuted Say's Law of markets that supply always creates its own demand. He maintained that all income earned by the factor owners would not be spent in buying products which they helped to produce.

A part of the earned income is saved and is not automatically invested because saving and investment are distinct functions. So when all earned income is not spent on consumption goods and a portion of it is saved, there results in a deficiency of aggregate demand.

This leads to general overproduction because all that is produced is not sold. This, in turn, leads to general

unemployment. Thus Keynes rejected Say's Law that supply created its own demand. Instead he argued that it was demand that created supply. When aggregate demand rises, to meet that demand, firms produce more and employ more people.

(3) Self-adjustment not Possible:

Keynes did not agree with the classical view that the laissez-faire policy was essential for an automatic and self-adjusting process of full employment equilibrium. He pointed out that the capitalist system was not automatic and self-adjusting because of the non-egalitarian structure of its society. There are two principal classes, the rich and the poor.

The rich possess much wealth but they do not spend the whole of it on consumption. The poor lack money to purchase consumption goods. Thus there is general deficiency of aggregate demand in relation to aggregate supply which leads to overproduction and unemployment in the economy. This, in fact, led to the Great Depression.

Had the capitalist system been automatic and self-adjusting, this would not have occurred. Keynes, therefore, advocated state intervention for adjusting supply

and demand within the economy through fiscal and monetary measures.

(4) Equality of Saving and Investment through Income Changes:

The classicists believed that saving and investment were equal at the full employment level and in case of any divergence the equality was brought about by the mechanism of rate of interest. Keynes held that the level of saving depended upon the level of income and not on the rate of interest.

Similarly investment is determined not only by rate of interest but by the marginal efficiency of capital. A low rate of interest cannot increase investment if business expectations are low. If saving exceeds investment, it means people are spending less on consumption.

As a result, demand declines. There is overproduction and fall in investment, income, employment and output. It will lead to reduction in saving and ultimately the equality between saving and investment will be attained at a lower level of income. Thus it is variations in income rather than in interest rate that bring the equality between saving and investment.

(5) Importance of Speculative Demand for Money:

The classical economists believed that money was demanded for transactions and precautionary purposes. They did not recognise the speculative demand for money because money held for speculative purposes related to idle balances.

But Keynes did not agree with this view. He emphasised the importance of speculative demand for money. He pointed out that the earning of interest from assets meant for transactions and precautionary purposes may be very small at a low rate of interest.

But the speculative demand for money would be infinitely large at a low rate of interest. Thus the rate of interest will not fall below a certain minimum level, and the speculative demand for money would become perfectly interest elastic. This is Keynes 'liquidity trap' which the classicists failed to analyse.

(6) Rejection of Quantity Theory of Money:

Keynes rejected the classical Quantity Theory of Money on the ground that increase in money supply will not necessarily lead to rise in prices. It is not essential that people may spend all extra money. They may deposit it in the bank or save.

So the velocity of circulation of money (V) may slow down and not remain constant. Thus V in the equation $MV = PT$ may vary. Moreover, an increase in money supply, may lead to increase in investment, employment and output if there are idle resources in the economy and the price level (P) may not be affected.

(7) Money not Neutral:

The classical economists regarded money as neutral. Therefore, they excluded the theory of output, employment and interest rate from monetary theory. According to them, the level of output and employment and the equilibrium rate of interest were determined by real forces.

Keynes criticised the classical view that monetary theory was separate from value theory. He integrated monetary theory with value theory, and brought the theory of interest in the domain of monetary theory by regarding the interest rate as a monetary phenomenon. He integrated the value theory and the monetary theory through the theory of output.

This he did by forging a link between the quantity of money and the price level via the rate of interest. For instance, when the quantity of money increases, the rate of interest falls, investment increases, income and output

increase, demand increases, factor costs and wages increase, relative prices increase, and ultimately the general price level rises. Thus Keynes integrated monetary and real sectors of the economy.

(8) Refutation of Wage-Cut:

Keynes refuted the Pigovian formulation that a cut in money wage could achieve full employment in the economy. The greatest fallacy in Pigou's analysis was that he extended the argument to the economy which was applicable to a particular industry.

Reduction in wage rate can increase employment in an industry by reducing costs and increasing demand. But the adoption of such a policy for the economy leads to a reduction in employment. When there is a general wage-cut, the income of the workers is reduced. As a result, aggregate demand falls leading to a decline in employment.

From the practical view point also Keynes never favoured a wage cut policy. In modern times, workers have formed strong trade unions which resist a cut in money wage. They would resort to strikes. The consequent unrest in the economy would bring a decline in output and income. Moreover, social justice demands that wages should not be cut if profits are left untouched.

(9) No Direct and Proportionate Relation between Money and Real Wages:

Keynes also did not accept the classical view that there was a direct and proportionate relationship between money wages and real wages. According to him, there is an inverse relation between the two. When money wages fall, real wages rise and vice versa.

Therefore, a reduction in the money wage would not reduce the real wage, as the classicists believed, rather it would increase it. This is because the money wage cut will reduce cost of production and prices by more than the former.

Thus the classical view that fall in real wages will increase employment breaks down. Keynes, however, believed that employment could be increased more easily through monetary and fiscal measures rather than by reduction in money wage. Moreover, institutional resistances to wage and price reductions are so strong that it is not possible to implement such a policy administratively.

(10) State Intervention Essential:

Keynes did not agree with Pigou that “frictional maladjustments alone account for failure to utilise fully

our productive power.” The capitalist system is such that left to itself it is incapable of using productive powerfully. Therefore, state intervention is necessary.

The state may directly invest to raise the level of economic activity or to supplement private investment. It may pass legislation recognising trade unions, fixing minimum wages and providing relief to workers through social security measures.

“Therefore”, as observed by Dillard, “it is bad politics even if it should be considered good economics to object to labour unions and to liberal labour legislation.” So Keynes favoured state action to utilise fully the resources of the economy for attaining full employment.

(11) Long-Run Analysis Unrealistic:

The classicists believed in the long-run full employment equilibrium through a self-adjusting process. Keynes had no patience to wait for the long period for he believed that “In the long-run we are all dead”.

As pointed by Schumpeter, “His philosophy of life was essentially a short-term philosophy.” His analysis is confined to short-run phenomena. Unlike the classicists, he assumes tastes, habits, techniques of production, supply of labour, etc. to be constant during the short period and so neglects long-run influences on demand.

Assuming consumption demand to be constant, he lays emphasis on increasing investment to remove unemployment. But the equilibrium level so reached is one of underemployment rather than of full employment. Thus the classical theory of employment is unrealistic and is incapable of solving the present day economic problems.

Keynesian Economics

John Maynard Keynes the most influential economist of the 20th century. When unemployment and over production was a common phenomenon in most of the capitalist economies at that time he came as a representative of god to solve these problems. In 1936 he published his magnum opus called “ **General theory of employment interest and money**” which brought a revolution in the realm of economics popularly known as Keynesian revolution and it give birth to a new branch of economics called ‘Macroeconomics’. He is undoubtedly a brilliant economist. His greatness is not merely in demolishing the classical theory during the eve of great depression, but also provided an alternative theory to help the capitalist economy.

Keynesian economics is an economic theory of total spending in the economy and its effects on output and inflation. Keynesian economics was developed by the British economist John Maynard Keynes during the 1930s in an attempt to understand the great depression. Keynes advocated for increased government expenditures and lower taxes to stimulate demand and pull the global economy out of the depression. Subsequently, Keynesian economics was used to refer to the concept that optimal economic performance could be achieved—and economic slumps prevented—by influencing aggregate demand through activist stabilization and economic intervention policies by the government. Keynesian economics is considered a "demand-side" theory that focuses on changes in the economy over the short run.

Main propositions of Keynes

Classical economists were of the view that there is always full employment in the economy, or there is always a tendency towards full employment in the economy. This view of them was based upon their belief in says law of market. In this background, Keynes wrote his book “General Theory of Employment Interest and Money”. In which he challenged the validity of the classical theory of employment. Keynes invented new tools and concepts of

economic analysis in terms of which he propounded his theory of income and employment. These new tools and concepts are propensity to consume, multiplier, marginal efficiency of capital, liquidity preference....in his analysis the effective demand plays an important role.

Assumptions of Keynes's General Theory:

To simplify his theory considerably, Keynes employed a few assumptions which must be noted to avoid any confusion or misunderstanding. These assumptions are:

1. Short period:

Keynes was writing about the short-period problem of depression. Therefore, he made the specific assumption of short-period so as to concentrate on the problem at hand. Keynes assumed that the techniques of production and the amount of fixed capital used remain constant in the model of his theory. In his view, short period is that in which new investments do not change the technique, the organisation and equipment. This considerably simplified his analysis, for he could thereby take employment and output as moving together in the same direction.

2. Perfect competition:

He assumed that there is a fairly high degree of competition in the markets. Or if there is some monopoly element somewhere, then its degree remains unchanged.

3. Law of Diminishing returns to scale:

Further, directly flowing from his assumption of unchanging techniques was his assumption of the operation of diminishing returns to productive resources or increasing cost.

4. Absence of Governmental Part in Economic Activity:

The government is assumed to play no (significant) part either as a taxpayer or as a spender. He ignored the fiscal operations of the government in his analysis to highlight the causes of and remedies for the instability of the pure capitalist economy.

5. A Closed Economy:

Keynes further assumed that the economy under analysis is a closed one; that is, he did not explicitly recognise in his analysis the influence of exports and imports. This considerably simplified his work.

6. Heroic Aggregation:

Keynes in his general theory dealt with aggregates like the national income, saving, investment, etc. and measured them in wage units to be able to ignore the questions arising out of changes in relative prices of resources.

7. Static Analysis:

The 'General Theory' does not trace out the effect of the future on the present economic events clearly. Its analysis remains comparatively static, though at times Keynes introduced expectations in his analysis.

Apparatus of Keynes's General Theory:

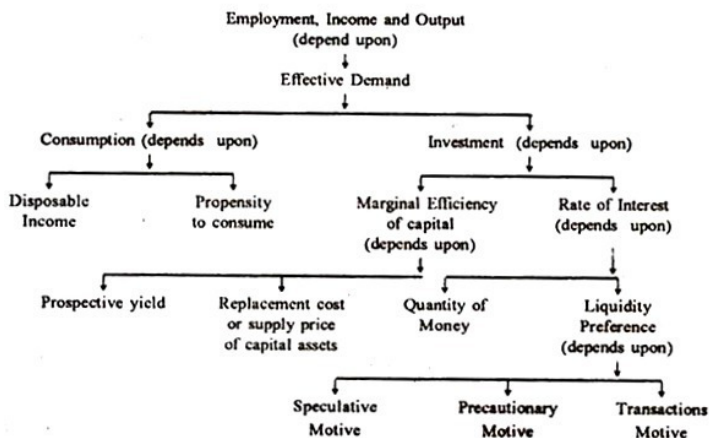
His theory is built up on the basic idea that 'Effective Demand' determines employment.

The effective demand in turn depends upon:

- (1) Consumption, and
- (2) Investment, which depends upon marginal efficiency of capital and the rate of interest.

Consumption C and Investment I further depend on a large number of other influences in the economy. Some of these are controllable by policy, others are not so. We have to select the more easily manageable factors influencing aggregate income and employment. All this requires detailed study of Keynes's General Theory. Before we do so, it will help us to know the general framework or apparatus of Keynes's theory.

The general apparatus of the Keynesian theory of employment can be briefly summarized in the following form:



start explaining the concepts from the top of the format given above. It conveys the impression that there are several factors on which employment depends. In the short period, employment, income and aggregate output are interrelated.

Keynes's first proposition was that total income depends upon the volume of total employment, which depends upon effective demand (D), which in turn, depends upon consumption expenditure (D1) and investment expenditure (D2): therefore, Effective Demand $D = D1 + D2$. Consumption depends upon the size of income and the propensity to consume while investment depends upon marginal efficiency of capital and the rate of interest.

The rate of interest depends upon the quantity of money and liquidity preference while the marginal efficiency of capital depends upon the expected profitability (M.E.C.) and replacement cost of capital assets. These propositions contain the essentials of the general theory' of employment. Let us study the concepts and relations one by one.

1. Effective Demand:

Effective demand manifests itself in the spending of income. It is judged from the total expenditure in the economy. The demand in the economy is ordinarily for two types of goods – consumption goods and investment goods. The demand for consumption goods forms a major part of the total demand and it goes on increasing with increase in income and employment. At various levels of income and employment, there will be different levels of aggregate demand, but all the levels of demand are not effective.

Effective demand is the demand for goods and services in the economy as a whole which is fully satisfied by the supply of the output as a whole. It was this theory of demand and supply of output as a whole which was neglected for more than 100 years and which Keynes analysed. He divided effective demand into two

components – consumption and investment. Consumption depends upon propensity to consume and investment is determined by inducement to invest.

2. Propensity to Consume:

Propensity to consume, also called the consumption function, is a key concept to Keynesian theory of employment. The equation $Y = C + I$, expresses the relationship between C and Y . We can write this relation as $C = f(Y)$. It tells us that there is a direct relation between income and consumption. Consumption function is written as a schedule of various amounts of consumption expenditure that consumers will incur at different levels of income.

It simply lays down that as our incomes increase; consumption will also increase though not in the same proportion as the increase in income. Propensity to consume refers to the actual consumption that takes place at different levels of income. An important fact about the consumption function is that it is stable in the short run because the consumption habits of the community remain more or less stable in the short run. According to Prof. Hansen, Consumption Function is the most important contribution of J.M. Keynes.

3. Saving (S):

In Keynesian Economics saving is defined as the excess of income over consumption, i.e., $S = Y - C$. The fundamental fact about saving is that its volume depends upon income. A man's saving is that part of his money income that is not spent on consumption goods. Generally speaking, saving is done in the form of cash or in buying shares and stocks, bonds etc. Community saving is simply an aggregate of individual saving. Classical economists believed that saving was a great private and social virtue.

Keynes, however, called it a social vice, as more saving on the part of an individual will mean less saving on the part of another individual, leaving the total savings of the community unaffected. Thus, according to Keynes, during a period of depression or recession encourage spending more to increase effective demand.

4. Investment (I):

In Keynesian economics, investment does not mean financial investment i.e., investing money in buying existing stocks and shares, bonds or equities. Here, it means real investment in new capital goods Investment in Keynesian economics is that expenditure which should result in an increase of employment of the factors of production in new factories and consumption.

In practical life the exact line of demarcation between investment and consumption is easily drawn; for example, expenditures on food and clothing are clearly consumption while those on buildings, factories and transportation facilities are easily investment.

Investment also includes additions to stocks of manufactured and semi-manufactured goods (inventories) as well as in fixed capital. Production in excess of what is currently-consumed is called investment. The distinction between consumption and investment is fundamental to Keynes' General Theory.

Since consumption expenditures in the short run remain stable, Keynes's theory stated in simple terms maintains that employment depends upon investment. This may be great simplification of facts but it brings forth the crucial importance of investment in Keynesian theory of employment. The fact of the matter is that employment fluctuates on account of the fluctuations in investment. Therefore, it is important to understand what determines the amount of investment.

5. Marginal Efficiency of Capital (MEC):

Investment depends upon the marginal efficiency of capital on the one hand and the rate of interest on the other. Marginal efficiency of capital refers to the expected

profitability of an additional capital asset; it may be defined as the highest rate of return over cost accruing from an additional unit of a capital asset. In other words, it is the highest rate of return over cost expected from producing one more unit (marginal unit) of a particular type of capital asset.

In Keynes's view, fluctuations in the marginal efficiency of capital are the fundamental cause of the business cycle. Its importance lies in the fact that in a private enterprise economy investment depends upon it. If the expected rate of profitability (MEC) of an additional unit of capital asset is high, private investors would be prepared to invest, otherwise not. There are a large number of short-run and long-run influences which affect the marginal efficiency of capital.

6. Liquidity Preference (LP):

Liquidity preference is a new concept used by Keynes. His theory of interest depends upon it. Interest, in turn, affects investment and employment. Liquidity preference means preference for liquidity or cash. Keynes's view was that money offers ready purchasing power for commodities and bonds. To guard against the risks of uncertain and vague future, people want to hold some of their assets in cash. In order to carry daily

transactions, to meet unforeseen contingencies and in order to take advantage of the market movements of bond prices, people want to hold cash; this constitutes the demand side of the Keynesian theory of the rate of interest.

The desire to hold cash, however, is not an absolute desire; it can be easily overcome by offering sufficiently high reward in the form of interest. The higher the liquidity preference i.e., the desire of the people to hold cash, the higher the rate of interest which must be offered to overcome their liquidity preference. Keynes considered government as the sole supplier of money in the short period.

7. Multiplier (K):

Multiplier is the key concept of Keynes. Keynes' multiplier is investment multiplier in the sense that a small increase in investment (A_1) is expected to lead to a much higher increase in income (A_y). Investment multiplier (Income multiplier) expresses the relationship between an initial investment and the ultimate increase in national income.

It shows that an initial increase in investment increases the national income by a multiple of it. Keynes believed that whenever an investment is made in an

economy, the national income increases not only by the amount of investment, but by something much more than the original investment.

Suppose in order to cure unemployment an investment of Rs. 5 crores is made in public works, the effect of this original investment would be to increase the national income several fold. If the national income is increased by an amount of say Rs. 15 crores then investment multiplier is $15/5 = 3$. In the analysis of trade cycle, theory of multiplier is an important tool Keynes's policy of public works was based on his belief in the working of the multiplier vigorously in the depression phase.

8. Underemployment Equilibrium:

The concept of underemployment equilibrium is the most revolutionary idea put forth by Keynes. Classical economists always believed that the economy was in equilibrium at full employment level only, but in his general theory Keynes could show successfully that the free enterprise market economy could be in equilibrium at less than full employment-to this, he gave the name of underemployment equilibrium.

According to Keynes, this was the normal situation of a free-enterprise market economy and economists

hailed this idea of Keynes as the most significant gift to economics. Keynes disputed the classical assumption of automaticity of full employment and the classical prescription that in the event of an economic depression wage cuts would bring about full employment in the economy.

According to him what actually existed in the capitalist society was under-employment and not full employment. Underemployment equilibrium was the result of private under-investment in relation to the savings available in the capitalist economy at the given income level.

The Keynesian Theory of Income, Output and Employment!

In the Keynesian theory, employment depends upon effective demand. Effective demand results in output. Output creates income. Income provides employment. Since Keynes assumes all these four quantities, viz., effective demand (ED), output (Q), income (Y) and employment (N) equal to each other, he regards employment as a function of income.

Effective demand is determined by two factors, the aggregate supply function and the aggregate demand function. The aggregate supply function depends on

physical or technical conditions of production which do not change in the short-run.

Since Keynes assumes the aggregate supply function to be stable, he concentrates his entire attention upon the aggregate demand function to fight depression and unemployment. Thus employment depends on aggregate demand which in turn is determined by consumption demand and investment demand.

According to Keynes, employment can be increased by increasing consumption and/or investment. Consumption depends on income $C(Y)$ and when income rises, consumption also rises but not as much as income. In other words, as income rises, saving rises.

Consumption can be increased by raising the propensity to consume in order to increase income and employment. But the propensity to consume depends upon the psychology of the people, their tastes, habits, wants and the social structure which determine the distribution of income.

All these elements remain constant during the short-run. Therefore, the propensity to consume is stable. Employment thus depends on investment and it varies in the same direction as the volume of investment.

Investment, in turn, depends on the rate of interest and the marginal efficiency of capital (MEC). Investment

can be increased by a fall in the rate of interest and/or a rise in the MEC. The MEC depends on the supply price of capital assets and their prospective yield.

It can be raised when the supply price of capital assets falls or their prospective yield increases. Since the supply price of capital assets is stable in the short- run, it is difficult to lower it. The second determinant of MEC is the prospective yield of capital assets which depends on the expectations of yields on the part of businessmen. It is again a psychological factor which cannot be depended upon to increase the MEC to raise investment. Thus there is little scope for increasing investment by raising the MEC.

The other determinant of investment is the rate of interest. Investment and employment can be increased by lowering the rate of interest. The rate of interest is determined by the demand for money and the supply of money. On the demand side is the liquidity preference (LP) schedule.

The higher the liquidity preference, the higher is the rate of interest that will have to be paid to cash holders to induce them to part with their liquid assets, and vice versa. People hold money (M) in cash for three motives: transactions, precautionary and speculative.

The transactions and precautionary motives (M) are income elastic. Thus the amount held under these two motives (M_1) is a function (L_1) of the level of income (Y), i.e. $M=L(Y)$. But the money held for speculative motive (M_2) is a function of the rate of interest (r), i.e. $M=L_2(r)$. The higher the rate of interest, the lower the demand for money, and vice versa.

Since LP depends on the psychological attitude to liquidity on the part of speculators with regard to future interest rates, it is not possible to lower the liquidity preference in order to bring down the rate of interest. The other determinant of interest rate is the supply of money which is assumed to be fixed by the monetary authority during the short-run.

The relation between interest rate, MEC and investment is shown in Figure 1, where in Panels (A) and (B) the total demand for money is measured along the horizontal axis from M onward. The transactions (and precautionary) demand is given by the L_1 curve at OY_1 and OY_2 levels of income in Panel (A) of the figure.

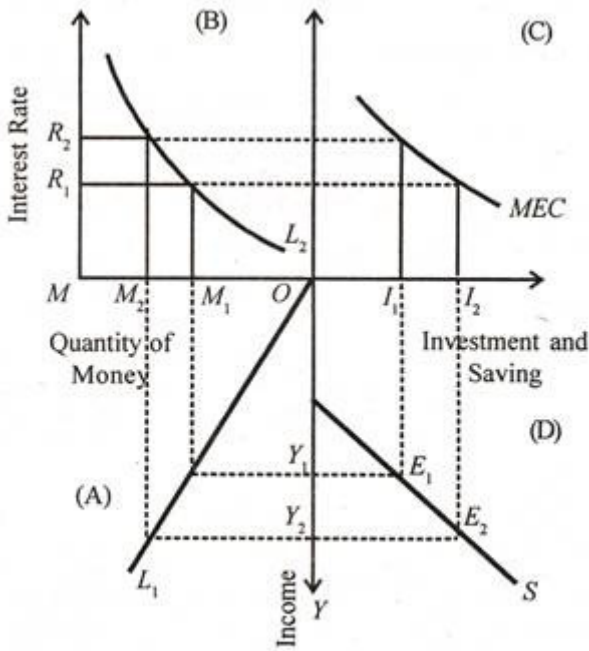


Fig. 1

Thus at OY_1 income level, the transactions demand is given by OM_1 and at OY_2 level of income it is OM_2 . In Panel (B), the L_2 curve represents the speculative demand for money as a function of the rate of interest.

When the rate of interest is R_2 , the speculative demand for money is MM_2 . With the fall in the rate of interest to R_1 , the speculative demand for money increases to MM_1 . Panel (C) shows investment as a function of the rate of interest and the MEC. Given the MEC, when the rate of interest is R_2 , the level of investment is OI_1 . But

when the rate of interest falls to R_1 , investment increases to OI_2 .

“In the Keynesian analysis, the equilibrium level of employment and income is determined at the point of equality between saving and investment. Saving is a function of income, i.e. $S=f(Y)$. It is defined as the excess of income over consumption, $S=Y-C$ and income is equal to consumption plus investment.

$$\text{Thus } Y = C + I$$

$$\text{Or } Y - C = I$$

$$Y - C = S$$

$$I = S$$

So the equilibrium level of income is established where saving equals investment. This is shown in Panel (D) of Figure 1 where the horizontal axis from O toward the right represents investment and saving, and OY axis represents income. S is the saving curve.

The line I_1E_1 is the investment curve (imagine that it can be extended beyond E as in an S and I diagram) which touches the S curve at E_1 . Thus OY_1 is the equilibrium level of employment and income. This is the level of underemployment equilibrium, according to Keynes. If OY_2 is assumed to be the full employment level of income then the equality between saving and

investment will take place at E_2 where I_2E_2 investment equals Y_2E_2 saving.

The Keynesian theory of employment and income is also explained in terms of the equality of aggregate supply (C+S) and aggregate demand (C+I). Since unemployment results from the deficiency of aggregate demand, employment and income can be increased by increasing aggregate demand.

Assuming the propensity to consume to be stable during the short-run, aggregate demand can be increased by increasing investment. Once investment increases, employment and income increase. Increased income leads to a rise in the demand for consumption goods which leads to further increase in employment and income.

Once set in motion, employment and income tend to rise in a cumulative manner through the multiplier process till they reach the equilibrium level. According to Keynes, the equilibrium level of employment will be one of under-employment equilibrium because when income increases consumption also increases but by less than the increase in income.

This behaviour of the consumption function widens the gap between income and consumption which ordinarily cannot be filled up due to the lack of required

investment. The full employment income level can only be established if the volume of investment is increased to fill the income-consumption gap corresponding to full employment.

The Keynesian cross model of under-employment equilibrium is explained in Figure 2 where income and employment are taken on the horizontal axis and consumption and investment on the vertical axis. Autonomous investment is taken as a first approximation. $C+I$ is the aggregate demand curve plotted by adding to consumption function C an equal amount of investment at all levels of income.

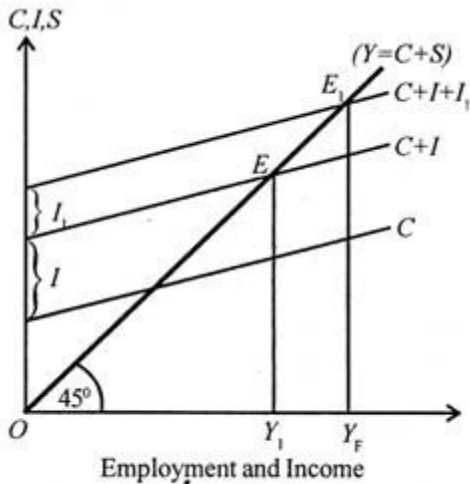


Fig. 2

The 45° line is the aggregate supply curve. The economy is in equilibrium at point E where the aggregate

demand curves C+I intersects the 45° line. This is the point of effective demand where the equilibrium level of income and employment OY_1 is determined.

This is the level of underemployment equilibrium and not of full employment. There are no automatic forces that can make the two curves cross at a full employment income level. If it happens to be a full employment level, it will be accidental. Keynes regarded the underemployment equilibrium level as a normal case and the full employment income level as a special case.

Suppose OY_F is the full employment income level. To reach this level, autonomous investment is increased by I_1 so that the C+I curve shifts upward as C+I+ I_1 , curve. This is the new aggregate demand curve which intersects the 45° line (the aggregate supply curve) at E_1 , the higher point of effective demand corresponding to the full employment income level OY_F .

This also reveals that to get a desired increase in employment and income of Y_1Y_F , it is the multiplier effect of an increase in investment by I_1 ($=I_2$ in Panel C of Figure 1) which leads to an increase in employment and income by Y_1Y_F through successive rounds of investment.

KEYNESIAN THEORY OF EMPLOYMENT, OUTPUT AND INCOME

Introduction:

The starting point of Keynes's theory of employment is the principle of effective demand. In a capitalist economy the level of employment depends on effective demand. It attributes unemployment to a lack of effective demand, i.e., to a deficiency of outlay on consumption and investment.

Concept of Effective Demand

The principle of effective demand is basic to Keynes analysis of income, output and employment. Effective demand manifests itself in the spending of income and is judged from the total expenditure in the economy. The total demand in the economy consists of consumption and investment. It goes on increasing with an increase in income and investment. At various levels of income and employment, there are corresponding level of demand. But all levels of demand are not effective, only that level of demand which is fully met with corresponding supply is effective. In other words, out of the various levels of demand, the one which is brought in equilibrium with supply is called effective demand.

In any community, effective demand represents the money actually spent by the people on the products. The money which entrepreneurs receive is paid in the form of

wages, rent, interest and profit. As such, effective demand (actual expenditure) equals national income; the receipts of all members of the community. It also represents the value of the output of community. Further, since all goods are consumption goods or investment goods, effective demand is equal to national expenditure on consumption and investment. Thus

Effective demand = National Income = Value of national output = Total expenditure

Hence it is the effective demand which determines employment at a particular time.

Determinants of Effective Demand:

Effective demand is determined by the aggregate demand function and aggregate supply function and their interrelationships.

Aggregate Demand Function:

Aggregate demand function (ADF), according to Keynes, relates to any given level of employment and to the expected proceeds from the volume of employment. The expected proceeds will be depended upon the expected expenditures on consumption and investment. Every producer in a free enterprise economy tries to maximize his proceeds. The sum total of income payments made to the factors of production constitutes the

factor costs. Thus the factor cost and the entrepreneurs' profit taken together give us the total amount of proceeds resulting from a given amount of employment. This aggregate income or aggregate proceeds expected from a given amount of employment is called the aggregate demand price of the output of that amount of employment. A schedule of the proceeds expected from the sale of output resulting from varying amount of employment is called the aggregate demand schedule or aggregate demand function. The aggregate demand function shows the increase in the aggregate demand price as the amount of employment increases. Thus aggregate demand schedule is an increasing function of the amount of employment. If D represents the proceeds expected by entrepreneurs from the employment of N men, the ADF can be written as

$$D = f(N)$$

which shows a relationship between D and N . The ADF is shown by the curve DD .

Aggregate Supply Function:

On the other hand, there are some proceeds of the output which the entrepreneurs expect will just make it worthwhile to provide a certain amount of employment. The minimum expected proceeds arising from the sale of

the output resulting from a given amount of employment are called the “aggregate supply price”. In other words, these are the minimum expected proceeds which are considered just necessary to induce entrepreneurs to provide a certain amount of employment. A schedule of the minimum amount of proceeds required to induce entrepreneurs to give varying amounts of employment is called aggregate supply function. This is also an increasing function of the amount of employment.

It is pertinent to observe here that in the aggregate demand function it is the expected sale proceeds that we consider and in the aggregate supply function it is the minimum sale proceeds. ASF slopes upward from left or right because the minimum sale proceeds will go on increasing with increase in employment. If Z is the aggregate supply price of the employment of N men, the ASF can be written as

$$Z = g(N)$$

Effective demand is determined at a point of intersection between the aggregate demand curve and the aggregate supply curve. It may be noted that there are many points on the aggregate demand function, but all these points are not effective demand. Only the point of intersection of aggregate demand function and the

aggregate supply function is considered as effective demand.

It may, however, be noted that the economy is in equilibrium at the point of intersection for here the entrepreneurs do not have the tendency either to increase or decrease employment, but this may or may not be a point of full employment equilibrium, in that case, it will be known as underemployment equilibrium or unemployment equilibrium.

KEYNESIAN CONSUMPTION FUNCTION

The Keynesian rejection of the classical assumptions about the consumption function marks the starting point of modern economic theory. Classical economists argued that the level of consumption was determined by the rate of interest. Variations in consumption and savings are due to variations in the rate of interest. Keynes, however, refuted this theory of consumption of the classical and held the view that the consumption expenditures are determined primarily by the level of income. Keynesians argued that consumption is relatively unaffected by interest rate. They say that MPC is positive and less than unity and that APC declines as income increases.

Fundamental Psychological Law of Consumption

Keynes's psychological law of consumption is an important tool of economic analysis in Keynesian economics. This law is a statement of a very common tendency that when income increases, consumption also increases but not to the same extent as the increase in income. The psychology of the community is such that the aggregate real income is increased, the aggregate consumption is increased but not by as much as income. Keynes remarked in his 'General Theory': "men are disposed, as a rule and on the average, to increase their consumption as their income increases but not by as much as the increase in their income." This law is popularly known as Propensity to Consume or Fundamental Psychological Law of Consumption.

Keynes's psychological law depends upon three related propositions:

1. When the aggregate income increases, consumption expenditure will also increase, but by somewhat smaller amount.
2. An increment of income will be divided in some ratio between saving and spending.
3. An increase in income is unlikely to lead either to less spending or less saving than before.

The first proposition is vital to Keynes's law of consumption. All this means that consumption essentially depends upon income or net income (disposable income) and the income receivers always have a tendency to spend less on consumption than the increment in income.

Consumption Function

Consumption function is simply a name for the general income-consumption relationship. The consumption function shows what consumers will wish to make on consumer goods and services at each possible level of disposable income. Thus consumption function expresses the relationship between income (Y) and consumption (C). As the relationship between income and consumption is a functional one, we represent it as

$$C = f (Y)$$

Keynesian Consumption Function

Keynesian consumption function can be written as

$$C = a + bY$$

Where 'a' is the autonomous consumption, 'b' represents the marginal propensity to consume, 'C' and 'Y' represents income and consumption respectively. According to Keynes, the relationship between consumption and income are direct and non-proportional.

Marginal Propensity to Consume:

Marginal propensity to consume is the ratio of change in consumption to a small change in income. In other words, it refers to marginal increase in consumption as a result of marginal increase in income and is expressed as

$$\text{MPC} = \frac{\Delta C}{\Delta Y}$$

where ΔC is the change in consumption and ΔY is the change in income.

The ratio of increase in consumption to increase in income is always less than one, i.e., $\text{MPC} < 1$ (less than unity). There is a double restriction for MPC which is written as $0 < \text{MPC} < 1$. It implies that MPC lies between the values zero and one.

Marginal Propensity to Save:

The complement of MPC is MPS. It can be easily derived from MPC because $\text{MPC} + \text{MPS} = 1$. Therefore,

$$\text{MPS} = 1 - \text{MPC}$$

$$\text{i.e., MPS} = 1 - \frac{\Delta C}{\Delta Y}$$

$$\text{i.e., MPS} = \Delta Y - \frac{\Delta C}{\Delta Y} = \frac{\Delta S}{\Delta Y}$$

where ΔS is the change in savings. Thus if MPC is known, MPS can be easily find out without any difficulty as the income of the community is divided between saving and spending. The value of MPS also lies between zero and one. That is,

$$0 < \text{MPS} < 1$$

Average Propensity to Consume:

APC is the ratio of absolute consumption to absolute income and is expressed as

$$\text{APC} = \frac{C}{Y}$$

Where C is the absolute consumption and Y is the absolute income. For example, if income is Rs.100 crore and consumption expenditure Rs.60 crore, then $\text{APC} = C/Y = 60/100 = 0.6$ or 60 %. Thus the value of APC for any income level may be found by dividing consumption by income.

Assumptions of Keynes's Psychological Law

1. It assumes that consumption depends upon income alone and other institutional and psychological factors such as income distribution, price level, population growth, fashion, taste, habit, etc. do not change (constant psychological institutional complex).

2. The second assumption is that there exist normal circumstances and no extra ordinary circumstances like war, revolution, hyper inflation, etc.
3. Another assumption on which Keynes's law depends is that it presumes a socio-economic set up based on laissez-faire.

Paradox of Thrift

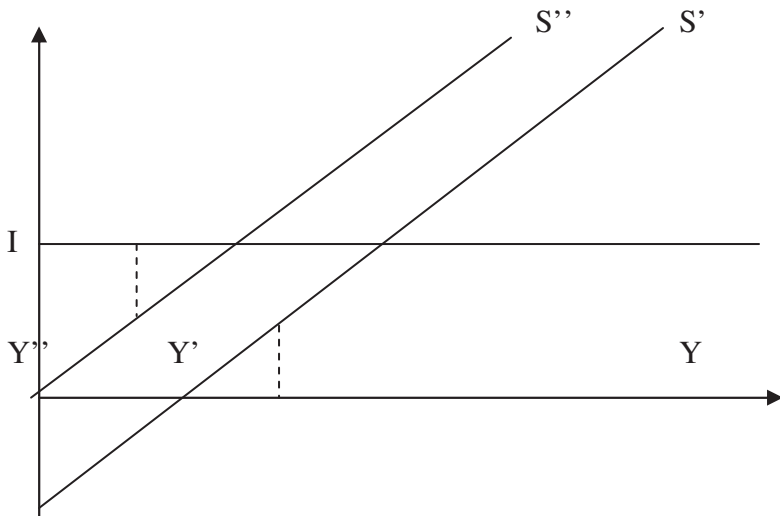
The **paradox of thrift** (or **paradox of saving**) is a paradox of economics, popularized by John Maynard Keynes, though it had been stated as early as 1714 in *The Fable of the Bees*, and similar sentiments date to antiquity. The paradox states that if everyone tries to save more money during times of recession, then aggregate demand will fall and will in turn lower total savings in the population because of the decrease in consumption and economic growth. The paradox is, narrowly speaking, that total savings may fall even when individual savings attempt to rise, and, broadly speaking, that increases in savings may be harmful to an economy. Both the narrow and broad claims are paradoxical within the assumption underlying the fallacy of composition, namely that what is true of the parts must be true of the whole. The narrow claim transparently contradicts this assumption, and the broad one does so by implication, because while

individual thrift is generally averred to be good for the economy, the paradox of thrift holds that collective thrift may be bad for the economy.

Suppose people decide to become thrifty, that is, they decide to save more at each level of income. One might expect that this would increase the total amount of savings, but the simple Keynesian multiplier model predicts a **paradox of thrift**, that total savings will remain the same and income will decline.

If people become thrifty, they consume less at each level of expected income. On a graph increased thriftiness can be illustrated as a shift downward of the consumption function or a shift upward of the savings function. If you draw in these shifted lines, you will see that equilibrium income will fall. But since in equilibrium savings plus taxes must equal investment plus government spending, and because by assumption investment, taxes, and government spending are fixed, in equilibrium savings cannot change. In fact, if we allowed investment to increase a bit with income (but not by too much, or the model has an unstable equilibrium), then the investment line would slope upwards a bit. At the new equilibrium caused by increased thriftiness, savings would actually be less.

Another way to illustrate the logic of the paradox S, I of thrift uses the analogy of the leaky bucket. Consider what will happen if the savings hole in the bucket is made a little larger, which corresponds to people becoming thrifty. Initially there will be a larger flow of water out. But this cannot continue indefinitely. Equilibrium exists when the inflow equals the outflow, and the inflow has not changed. This means that the water level must drop so that the pressure forcing water out the bottom will be reduced. Less pressure means less outflow, and at some lower level of water equilibrium will be reestablished. It is illustrated in the figure.



Paradox of Thrift

Because $Y=C + I$ and the level of investment has not changed, if in the aggregate everyone tries to save more, i.e. S increases, which means a fall in C , income will adjust downward (Y will fall) to preserve equilibrium. Paradoxically, an attempt to save more (shift from S' to S'') leads to declining consumption, (declining effective demand) and declining income. Saving and investment are the same but now the total level of income is lower. If lower income gives a signal to investors that demand will decline in the near future, investors may in turn decide to lower investment (not shown on graph) which will further reduce aggregate income and reduce saving! So paradoxically a desire to save more in the aggregate could lead to lower savings in the future if the resulting fall in income produces falling investment. In sum, saving more for the individual may be good for him or her, but if everyone in the economy tries to do so, the cumulative effect is negative. The only way to increase savings in the economy as a whole is to increase investment and therefore income.

Contrast this with the neoclassical story: In the neoclassical model, greater savings make available more funds for investment. Here it is the exact opposite. Greater

saving means lower consumption, demand, profit expectations and therefore investment.

MULTIPLIER

The concept of multiplier occupies an important place in Keynesian theory. Keynesian concept of multiplier was known as investment or income multiplier. Keynes's theory of investment multiplier was inspired by the work of R.F.Kahn (who introduced the concept of employment multiplier).

The multiplier expresses the relationship between an initial increment in investment and final increment in aggregate income. To be more precise, multiplier is the ratio of the total change in income to the initial change in investment. It tells us how many times the income increases as a result of an initial increase investment. Mathematically, it can be expressed as

$$k = \frac{\Delta Y}{\Delta X}$$

where k denotes multiplier, ΔY is the change in income and ΔI is the change in investment.

The value of multiplier is determined by the marginal propensity to consume (MPC). Higher the MPC higher will be the value of multiplier. The relationship between multiplier and MPC can be shown as

$$k = \frac{1}{1 - MPC} \text{ or } \frac{1}{MPS}$$

Thus, multiplier is the reciprocal of $1 - MPC$ or MPS . If the value of MPC or MPS is known, we can calculate the value of multiplier. Suppose $MPC = 0.8$, then multiplier is

$$k = \frac{1}{1 - 0.8} = \frac{1}{0.2} = 5$$

Greater the MPC , higher will be the size of multiplier and vice versa. According to the Psychological Law of Consumption, the value of MPC lies between 0 and 1. Therefore, the value of multiplier is always greater than one or it lies between 1 and ∞ (infinity).

INCOME DETERMINATION

The net national product or income in a country is the aggregate of consumption, net investment, government expenditure and the net foreign balance or net export, that is,

$$Y = C + I + G + (X - M)$$

Where Y is the income, C denotes consumption, I denotes net investment, G denotes government expenditure and $X - M$ denotes net export.

The change in the income of a country can be attributed to the changes in any one or all these variables.

Let us now examine income determination in an economy with two sectors, namely, household and business sectors.

TWO SECTOR MODEL (SIMPLE KEYNESIAN MODEL)

This was the model originally presented by Keynes in his celebrated work 'The General Theory of Employment, Interest and Money' (1936). This model assumes a free enterprise economy without government activity and foreign transactions. So in a closed economy without government participation in economic activities, there are only two sectors, namely, firms and households. Private firms are investors and producers and the households are consumers and savers.

In a two sector model equilibrium level of income takes place when aggregate demand is equal to aggregate supply. Aggregate demand consists of consumption and investment spending ($AD = C + I$). Aggregate supply is the quantity of goods and services available for sale or it is the income of the country.

Equilibrium level of income can be examined in two ways:

1. Income—Expenditure approach:

According to this approach, equilibrium is attained when aggregate supply (income) is equal to aggregate demand (expenditure), that is,

$$Y = C + I$$

Or

Income = Expenditure

2. *Savings—Investment Approach:*

In this approach, equilibrium occurs when saving is equal to investment, that is,

$$S = I$$

Assumptions:

The model of income determination is based on the following assumptions:

1. A two sector economy consisting household and business sectors.
2. Constant level of investment ($I = I$)
3. No saving by business sectors.
4. Consumption function remains constant.
5. There is no government and foreign trade.

Determination of National Income – An Algebraic Determination:

The condition for equilibrium in a two sector model is that output or income equals aggregate demand.

$$Y = C + I$$

Where Y = income or output, C = consumption and I = Investment.

From the Psychological Law of Consumption, we know that $C = a + b Y$ and from the second assumption we know that

$$I = I$$

Where 'a' is the autonomous consumption and 'b' is the MPC. Therefore the equilibrium condition can be rewritten as

$$Y = a + b Y + I \quad \dots\dots\dots (1)$$

Solving for Y we get

$$Y - b Y = a + I$$

$$\text{i.e., } Y (1 - b) = a + I \quad \dots\dots\dots (2)$$

Therefore,

$$Y = \frac{1}{1-b} (a + I) \quad \dots\dots\dots (3)$$

If there is a change in investment or autonomous consumption (a) income will change. Suppose investment rises to a new level $I + \Delta I$. Then the income will also rise by an amount, ΔY , so that the new level of income may be expressed as follows:

$$Y + \Delta Y = \frac{1}{1-b} (a + I) + \frac{1}{1-b} (\Delta I) \quad \dots\dots\dots (4)$$

Subtracting equation (3) from equation (4) we get

$$\Delta Y = \frac{1}{1-b} \Delta I \quad \dots\dots\dots(5)$$

Thus the change in income (ΔY) is $\frac{1}{1-b}$ times change in investment. Now dividing both sides of equation (5) by ΔI we get

$$\frac{\Delta Y}{\Delta I} = \frac{1}{1-b}$$

The term $\frac{1}{1-b}$ is called the multiplier.

**THREE SECTOR KEYNESIAN THEORY
(DETERMINATION OF THE EQUILIBRIUM
LEVEL OF INCOME AND OUTPUT, INCLUDING
GOVERNMENT EXPENDITURE AND TAXATION)**

In the two sector economy in which we assume there was no government, disposable personal income is found to be equal to net national product. In the three sector economy, however, taxes absorb a portion of income. Therefore, disposable personal income is less than net national product or national income by the amount of taxes. Let Y represent national income and Y_d disposable personal income. We now have Y_d identically equal to $Y - T$, that is,

$$Y_d \equiv Y - T$$

where T denotes taxes (direct taxes).

Now with Y_d less than Y , the consumption function becomes

$$C = a + b Y_d \text{ or}$$

$$C = a + b (Y - T) \dots\dots\dots (1)$$

In this model we assume that investment is entirely autonomous ($I = I$) and government expenditure is constant ($G = G$). The equilibrium level of income is given as

$$Y = C + I + G \dots\dots\dots (2)$$

$$\text{i.e., } Y = a + b (Y - T) + I + G$$

$$\text{i.e., } Y = a + bY - bT + I + G$$

$$\text{i.e., } Y - bY = a - bT + I + G \dots\dots\dots (3)$$

Therefore,

$$Y = \frac{1}{1-b} (a - bT + I + G) \dots\dots\dots (4)$$

Equation (4) shows the equilibrium level of income in a three sector economy.

Expressed in terms of saving and investment, equilibrium will be found at that level of income and output at which planned saving plus taxes equal to planned investment plus government expenditure, that is,

$$S + T = I + G$$

DETERMINATION OF EQUILIBRIUM INCOME AND OUTPUT IN A FOUR SECTOR ECONOMY

In a four sector economy we have the following identity for the net national product

$$Y = C + I + G + (X - M) \dots\dots\dots (1)$$

where X and M are exports and imports respectively. X - M represents the net export.

As always, corresponding to the flow of expenditure on the right is an equal flow of income on the left which is split up into S, C, and T. To show the break down on both the expenditures and income sides we now have C + S + T identically equal to C + I + G + (X - M).

If C is dropped from both sides we have

$$S + T = I + G + (X - M) \dots\dots\dots (2)$$

in the explanation of the determination of the equilibrium level of income in a four sector economy.

Import Function:

All else be equal as the income level rises, we expect an induced rise in spending. We may also expect aht some portion of the rise in spending will be for imported goods and services. As a rough approximation, we will assume that there is a linear relationship between income and imports which gives us the import function

$$M = Ma + mY \dots\dots\dots (3)$$

Here Ma represents autonomous expenditure for imports and m is the marginal propensity to import (MPM). Ma is

the amount of expenditure on imports at the zero level of income, or the amount of import expenditure that is independent of the level of income. 'm' is simply the fraction of any change in income that will be devoted to expenditure on imports, that is,

$$M = \frac{\Delta M}{\Delta Y} \dots\dots\dots (4)$$

Exports

Exports are assumed to be externally determined. The level of exports depends on the whole complex of external conditions.

The equilibrium level of income:

In the four sector economy, the equilibrium level of income is that at which aggregate spending is equal to income. This gives us the general equation for the equilibrium level of income.

$$Y = C + I + G + (X - M) \dots\dots\dots (5)$$

It can also be said that because $C + S + G = C + I + G + (X - M)$, the equilibrium level of income is that at which

$$S + T = I + G + (X - M) \text{ or}$$

$$S + T + M = I + G + X$$

Now substituting equation (3) in the equilibrium equation, we get

$$Y = C + I + G + X - (Ma + mY)$$

Rearranging we get,

$$Y = a + b Y - b T + I + G + X - Ma - mY$$

i.e., $Y - bY + m Y = a - b T + I + G + X - Ma$

Therefore,

$$Y = \frac{1}{1-b+m} (a - b T + I + G + X - Ma)$$

..... (6)

Equation (6) shows the equilibrium level of

income. Here $\frac{1}{1-b+m}$ is the foreign trade multiplier for a system in which consumption expenditure and import expenditure are linear functions of the level of domestic income.

Marginal Efficiency of Capital (MEC) Approach to Investment

In the present value method, the present value of the future returns on capital was compared to the supply price of capital. An alternative but similar approach to the evaluation of investment decisions was developed by Keynes in his “General Theory”. Using Keynesian terminology, we shall define MEC as that discount rate, if which, if applied to the stream of returns on capital would equate the present value of the returns to the supply price of capital. More mechanically, the MEC is the discount rate which satisfies the equation

$$C = \frac{R_1}{1+MEC} + \frac{R_2}{(1+MEC)^2} + \frac{R_3}{(1+MEC)^3} + \dots + \frac{R_n}{(1+MEC)^n}$$

Where C is the cost of capital.

According to the Keynesian approach, the MEC could be compared to the market rate of interest and the comparison would yield a decision rule for firms considering the purchase of capital goods. The appropriate decision rule would be

If $MEC >$ rate of interest -- buy the capital good

If $MEC <$ rate of interest -- do not buy the capital good

If $MEC =$ rate of interest -- indifferent situation

The analysis of the investment behaviour of an individual firm should allow us to formulate a theory of investment. We should first attempt to show how the business sector determines the desired level of its capital stock.

In the process we shall assume that, given the state of technology and the general level of demand for the products of business sector, the MEC declines as the stock of capital increases. This is happening because

- (1) If the labour force is already fully employed, then the increased use of capital would eventually bring

about diminishing marginal productivity of capital. Thus the physical returns on capital would decline as the capital stock increased.

- (2) If some firms try to hire more labour, then it is possible only through the incentive of higher wages—this leads to decline in returns.
- (3) If neither of these influences were present, the expanded use of capital stock would tend to reduce the product price—therefore MEC declines

These factors taken together allow us to specify a downward sloping MEC schedule.

Keynes's Theory of Rate of Interest or Monetary Theory of Rate of Interest (Liquidity Preference Theory)

To Keynes, money interest rate is determined by the demand for and supply of money. Keynes's theory based on liquidity preference (prefer to hold cash) is called monetary theory of rate of interest as against the classical real theory of rate of interest.

According to Keynes, money is not only a medium of exchange but also a store of value. He laid more emphasis on the latter function of money. In his opinion people have great liquidity preference on account of the fact that it gives them ready command over goods and

services. People need a lot of cash to meet the transaction, precautionary and speculative motives.

Transaction motives:

The demand for money a medium of exchange is called the transaction demand for money. It is the money demanded in order to meet day to day expenses. The demand for money for transaction purposes depends upon income (it is income elastic).

$$M_d = f(Y)$$

Precautionary motive:

Demand for money in order to take proper precautions against unforeseen future contingencies like sickness, unemployment, accidents, fire, etc is called precautionary demand for money. This is also determined by income (income elastic). Keynes has taken transaction and precautionary demand for money together as they both are income determined.

$$M_t = f()$$

$$\text{Where } M_t = M_d + M_p$$

Speculative motive:

Keynes emphasized speculative demand for money as he felt that people kept cash to take advantage of the rise and fall of prices of bonds and securities. The speculative demand for money arises on account of the

uncertainty regarding the future rate of interest. Given the amount of wealth and uncertainty regarding future, the speculative demand for money is related inversely with the rate of interest.

$$M_s = g (r)$$

At high rate of interest people will hold no money in speculative balances. At very low rate of interest, the demand for money curve becomes perfectly elastic (parallel to horizontal axis), that is, they will not hold any bond or securities – speculative balance is the highest or maximum – this situation is explained as liquidity trap.

Total demand for money:

All the three motives taken together give us the total demand for money.

$$M^D = M^D(Y, r)$$

Supply of money:

By supply of money we simply mean the sum total of currency and bank deposit held by the non-bank public. The monetary authority is responsible for determining the supply of money in an economy. It is therefore clear that the supply of money is exogenously determined by the monetary authority and is not responsive to changes in the rate of interest (money supply curve is completely interest inelastic and is therefore vertical or parallel to Y-axis).

Determination of interest rate:

Rate of interest is determined at that point where demand for money is equal to supply of money.

Keynes and classical (comparison)

- (1) classical – long term & Keynes – short term
- (2) Keynes opposed saving, thrift and frugality –
Keynes advocated spending and thriftless ness
during depression – while spending was a virtue,
saving was an evil
- (3) Classical favoured wage cutting for increasing the
volume of employment
Keynes opposed wage cutting and favoured wage
rigidity
- (4) Classical – full employment equilibrium
Keynes – under employment equilibrium
- (5) As against the classicals, Keynes succeeded in
linking the general theory with the theory of
money.
- (6) Classical – no dynamic elements
Keynes – included dynamic elements, particularly
in the form of expectations which play an
important role in the determination of MEC.

- (7) Classicals – micro approach
Keynes – macro ting to the economic theory
- (8) Classical theory applicable only to the full employment situation
Keynesian theory applicable to all situations – full employment, less than full employment
- (9) Classicals – interest rate is the reward for waiting & it is determined by savings and investment
Keynes – interest rate determined by demand for money (liquidity preference) and supply of money
- (10) Classical economists favoured balanced budget
Keynes believed that budgeting should be adjusted to the requirements of the economy
- (11) Classicals – whenever money supply increases the general price level would go up in the same proportion, without affecting real variables as there is full employment – monetary policy is ineffective
Keynes – no full employment – increase in money supply increases output – monetary policy effective
- (12) Classicals – laissez faire policy
Keynes – government intervention required

Keynes's analysis of the labour market

Unemployment is an emotive issue and this is reflected in the terminology adopted in the economic

analysis of unemployment. The fundamental principle of the classical theory is that the economy is self-regulating. Classical economists maintain that the economy is always capable of achieving the natural level of real GDP or output, which is the level of real GDP that is obtained when the economy's resources are fully employed. While circumstances arise from time to time that cause the economy to fall below or to exceed the natural level of real GDP, self-adjustment mechanisms exist within the market system that work to bring the economy back to the natural level of real GDP. The classical doctrine—that the economy is always at or near the natural level of real GDP—is based on two firmly held beliefs: Say's Law and the belief that prices, wages, and interest rates are flexible. Flexibility of the wage rate keeps the labor market or the market for workers, in equilibrium all the time. If the supply of workers exceeds firms' demand for workers, then wages paid to workers will fall so as to ensure that the work force is fully employed. Classical economists believe that any unemployment that occurs in the labor market or in other resource markets should be considered voluntary unemployment. Voluntarily unemployed workers are unemployed because they refuse to accept lower wages. If

they would only accept lower wages, firms would be eager to employ them.

Keynes rejected the classical conclusion of full employment in a capitalist economy. The worldwide depression of the 1930s gave birth to Keynesian economics.

The entire capitalist world now experienced massive unemployment problem. Keynes now forcefully argued that a capitalist economy can never reach full employment. Keynes Rejected the Fundamental Classical Assumption of Normal, Automatic Full Employment Equilibrium in the Economy. He considered it as unrealistic. He regarded full employment as a special situation. He observed that the general situation in a capitalist economy is one of underemployment.

Keynes's Analysis of Labour Market

Labour Market

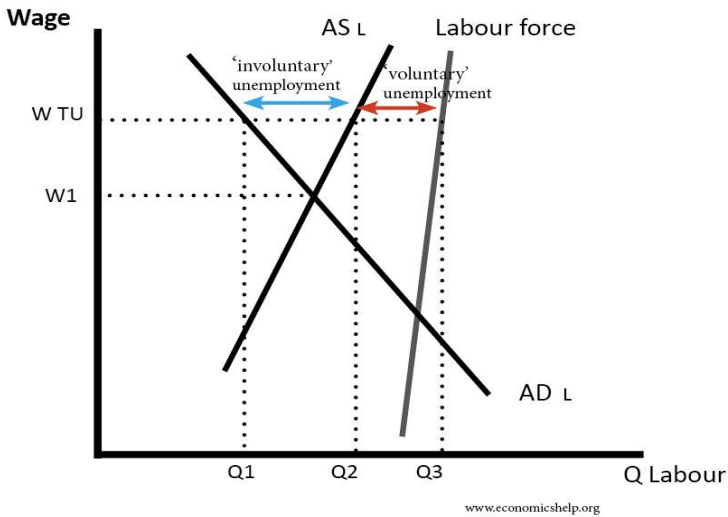
A labour market is the place where workers and employees interact with each other. In the labour market, employers compete to hire the best, and the workers compete for the best satisfying job. A labour market in an economy functions with demand and supply of labour. In this market, labour demand is the firm's demand for labour and supply is the worker's supply of labour.

Keynes based his own analysis of unemployment on the neo classical theory of the labour market. In the past Keynesians and Neo classicists have adopted the same approach to the demand side of the labour market but have differed over specifying the supply side of that market.

First of all we have to understand the views of Keynes regarding employment. The Keynes theory of employment was based on the view of the short run. The main point related to starting point of Keynes theory of employment is the principle of effective demand. Keynes propounded that the level of employment in the short run is dependent on the aggregate effective demand of products and services.

According to Keynes, full employment situation is a sort of astrological coincidence. What is reality is underemployment. Thus, Keynes developed his under-employment equilibrium hypothesis rather than full employment equilibrium. If, at the going wage rate, people do not find employment a situation of unemployment emerges. Such unemployment has been called 'involuntary unemployment' by Keynes. In Keynesian theory, involuntary unemployment is associated with insufficient aggregate demand and so is closely related to demand deficient unemployment. If aggregate demand

falls, this leads to involuntary unemployment because wages are ‘sticky downwards.’ Cutting real wages will not solve this unemployment because cutting real wages will lead to further fall in aggregate demand. The solution is to increase aggregate demand. The below graph shows how the process of involuntary unemployment occur in the economy when wage rate increases.



The labour market is one of the major components which determine employment and related aggregates.

Full employment guaranteed in the classical model providing that the competition prevails in the labour market, and prices and wages are perfectly flexible. In sharp contrast, Keynes did not accept that the labour market worked in a way that would always ensure market clearing. Involuntary unemployment is likely to be a

feature of the labour market if money wages are rigid. But Keynes went further than this and argued that flexibility of nominal wages would be unlikely to generate powerful enough forces which could lead the economy back to full employment.

Rigidity of nominal wages

The workers are rendered unemployed because at a given wage rate supply of labour exceeds demand for labour. Keynes believed that money wage would not change sufficiently in the short run to keep the economy at full employment. To understand money wage rigidity which results in unemployment we have to examine why labour market does not clear through reduction in money wages, Keynes gave three reasons for the stickiness of money wage rate. It may be noted that stickiness or rigidity of money wage implies that money wage rate will not quickly change.

1. Money Illusion:

The first reason why firms fail to cut wages despite an excess supply of labour is that workers will resist any move for cut in money wages though they might accept fall in real wages brought about by rise in prices of commodities.

2. Wage Fixation through Contracts:

In most of the free market economies such as those of USA and Great Britain, wages are fixed by the firms through contracts made with the workers for a year or two. There is little possibility of changing money wages fixed through contracts.

3. Minimum Wage Laws:

Another reason for money wage rigidity or, what is also called money wage stickiness, is the intervention by the Government in fixing minimum wages below which employers are not permitted to pay wages to the workers.

Price Flexibility and Money Wage Rigidity: Keynes' View of Involuntary Unemployment:

In Keynes' contractual view of labour market, it is assumed that whereas prices are free to vary, the money wage is fixed. It is important to note that Keynesians do not believe that money wage rate is completely fixed or sticky. What they actually mean by sticky wages is that money wages do not fall quickly to bring demand for and supply of labour in equilibrium at full employment.

In their view money wages are very slow to adjust sufficiently to ensure full employment of labour when there is a decline in aggregate demand resulting in lowering of prices of products. As a consequence, involuntary unemployment comes into existence. It may

be further noted that Keynes was particularly concerned with downward rigidity of money wages at which the demand for labour exceeds the supply of labour and consequently unemployment or excess supply of labour emerges.

It is important to note that Keynes accepted the classical theory of labour demand according to which firms demand labour up to the point at which real wage rate (that is, money wage rate divided by the price level or, W/P) is equal to the marginal product of labour.

At a higher real wage rate, less amount of labour will be demanded and, at a lower real wage rate, more labour will be demanded or employed. In other words, demand curve of labour is downward sloping. Keynes' theory of involuntary unemployment based on price flexibility and money wage rigidity is depicted in Figure 12.2.

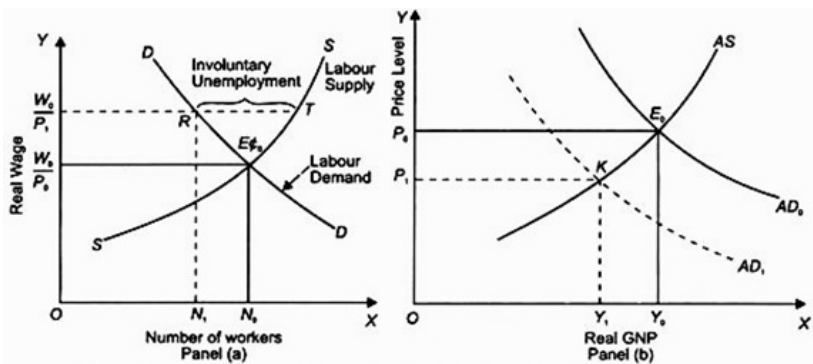


Fig. 12.2. Keynes' Rigid Money Wage and Flexible Price Model: The Emergence of Involuntary Unemployment

In panel (b) of Figure. 12.2 short-run aggregate supply curve AS and aggregate demand curve AD_0 have been drawn and through their interaction determine price level P_0 and the level of real GNP equal to Y_0 . It is important to note that short-run aggregate supply curve AS has been drawn with a given fixed money wage rate, say W_0 .

In panel (a) of Figure 12.2 the level of labour employment N_0 shows the number of jobs when the economy is producing Y_0 level of national output in panel (b) corresponding to the equilibrium between aggregate supply AS and aggregate demand AD_0 at price level P_0 , with a fixed money wage and the level of GNP equal to Y_0 .

The labour market must be in equilibrium at point E_0 or at real wage rate W_0/P_0 at which N_0 workers are demanded and employed. All those who are willing to get jobs at the real wage rate W_0/P_0 are in fact demanded and employed. Thus, equilibrium at E_0 or at level of employment N_0 represents full-employment equilibrium.

Now consider again panel (b) of Figure 12.2. Suppose due to fall in marginal efficiency of capital there is reduction in investment demand which along with its multiplier effect causes a leftward shift in the aggregate

demand curve AD. Since Keynes believed that with a fixed money wage rate aggregate Supply curve AS is given and remains unchanged, it will be seen from panel (b) of Figure 12.2 that new aggregate demand curve AD_1 and the fixed aggregate supply curve AS intersect at point K determining new equilibrium lower price P_1 and smaller real GNP equal to Y_1 .

Keynes asserted that the economy would remain stuck at point K with less than full-employment level of output Y_1 and lower price level P_1 . Now, a glance at panel (a) of Figure 12.2 shows that with fixed money wage W_0 and lower price level P_1 ($P_1 < P_0$), the real wage rate rises to W_0/P_1 . It will be seen from panel (a) of Figure 12.2 that at this higher real wage rate W_0/P_1 the smaller amount of labour N_1 will be demanded and employed by all firms in the economy. However, at this higher wage rate W_0/P_1 (with money wage rate fixed at W_0), RT number of workers are rendered unemployed. It is in this way that Keynes explained that with money wage rate remaining fixed at the level W_0 and with flexible prices, the fall in aggregate demand results in persistent involuntary unemployment.

Thus, by explaining the emergence of persistent involuntary unemployment Keynes made a fundamental

departure from the classical view of a free market economy which denied the existence of involuntary unemployment except for a short time.

Keynes vehemently opposed the classical position of automatic adjustment and the Pigovian formulation of Say's Law because the same had become obsolete in the conditions of contemporary capitalist world. Keynes particularly objected to the notion that unemployment would disappear, if workers will just accept sufficiently low money wage rates. According to Keynes' this type of classical reasoning turned out to be extremely disastrous both from the theoretical and practical points of views.

He contended that collective bargaining by trade unions, minimum wage laws, unemployment benefits, etc. have become an integral part of the modern advanced and democratic economies possessing increased productivity and technology and the classical theory of employment though quite logical on account of strong basic postulates yet is unacceptable owing to the unrealistic nature of its assumptions.

Thus, by explaining the emergence of persistent involuntary unemployment Keynes made a fundamental departure from the classical view of a free market

economy which denied the existence of involuntary unemployment except for a short time.

KEYNES AND INTERNATIONAL MACRO ECONOMICS

The publication of the General Theory in 1936 had an enormous impact on both economic theory and policy. Keynes's contribution has been very influential in the field of macroeconomic policy-making.

Keynes described his premise in "The General Theory of Employment, Interest, and Money."⁴ Published in February 1936, it was revolutionary. First, it argued that government spending was a critical factor driving aggregate demand. That meant an increase in spending would increase demand. Second, Keynes argued that government spending was necessary to maintain full employment.

Keynesian economics served as the standard economic model in the developed nations during the later part of the Great Depression, World War II, and the post-war economic expansion (1945–1973), though it lost some influence following the oil shock and resulting stagflation of the 1970s. The advent of the financial crisis of 2007–08 caused resurgence in Keynesian thought, which continues as new Keynesian economics.

Keynesian economists generally argue that as aggregate demand is volatile and unstable, a market economy often experiences inefficient macroeconomic outcomes in the form of economic recessions (when demand is low) and inflation (when demand is high), and that these can be mitigated by economic policy responses, in particular, monetary policy actions by the central bank and fiscal policy actions by the government, which can help stabilize output over the business cycle. Keynesian economists generally advocate a managed market economy – predominantly private sector, but with an active role for government intervention during recessions and depressions

FISCAL POLICY

Keynes argued that the solution to the Great Depression was to stimulate the country ("incentive to invest") through some combination of two approaches:

1. A reduction in interest rates (monetary policy), and
2. Government investment in infrastructure (fiscal policy).

If the interest rate at which businesses and consumers can borrow decreases, investments that were previously uneconomic become profitable, and large consumer sales normally financed through debt (such as houses,

automobiles, and, historically, even appliances like refrigerators) become more affordable. A principal function of central banks in countries that have them is to influence this interest rate through a variety of mechanisms collectively called *monetary policy*. This is how monetary policy that reduces interest rates is thought to stimulate economic activity, i.e., "grow the economy"—and why it is called *expansionary* monetary policy.

Expansionary fiscal policy consists of increasing net public spending, which the government can effect by a) taxing less, b) spending more, or c) both. Investment and consumption by government raises demand for businesses' products and for employment, reversing the effects of the aforementioned imbalance. If desired spending exceeds revenue, the government finances the difference by borrowing from capital markets by issuing government bonds. This is called deficit spending. Two points are important to note at this point. First, deficits are not required for expansionary fiscal policy, and second, it is only *change* in net spending that can stimulate or depress the economy. For example, if a government ran a deficit of 10% both last year and this year, this would represent neutral fiscal policy. In fact, if it ran a deficit of 10% last year and 5% this year, this would actually be

contractionary. On the other hand, if the government ran a surplus of 10% of GDP last year and 5% this year, which would be expansionary fiscal policy, despite never running a deficit at all.

Keynes's ideas influenced Franklin D. Roosevelt's view that insufficient buying-power caused the Depression. During his presidency, Roosevelt adopted some aspects of Keynesian economics, especially after 1937, when, in the depths of the Depression, the United States suffered from recession yet again following fiscal contraction. But to many the true success of Keynesian policy can be seen at the onset of World War II, which provided a kick to the world economy, removed uncertainty, and forced the rebuilding of destroyed capital. Keynesian ideas became almost official in social-democratic Europe after the war and in the U.S. in the 1960s.

Keynesian economists believe that adding to profits and incomes during boom cycles through tax cuts, and removing income and profits from the economy through cuts in spending during downturns, tends to exacerbate the negative effects of the business cycle. This effect is especially pronounced when the government controls a large fraction of the economy, as increased tax

revenue may aid investment in state enterprises in downturns, and decreased state revenue and investment harm those enterprises.

Keynesian Economics and Monetary Policy

Keynesian economics focuses on demand-side solutions to recessionary periods. The intervention of government in economic processes is an important part of the Keynesian arsenal for battling unemployment, underemployment, and low economic demand. The emphasis on direct government intervention in the economy places Keynesian theorists at odds with those who argue for limited government involvement in the markets. Lowering interest rates is one way governments can meaningfully intervene in economic systems, thereby generating active economic demand. Keynesian theorists argue that economies do not stabilize themselves very quickly and require active intervention that boosts short-term demand in the economy. Wages and employment, they argue, are slower to respond to the needs of the market and require governmental intervention to stay on track.

Prices also do not react quickly, and only gradually change when monetary policy interventions are made. This slow change in prices, then, makes it possible to use

money supply as a tool and change interest rates to encourage borrowing and lending. Short-term demand increases initiated by interest rate cuts reinvigorate the economic system and restore employment and demand for services. The new economic activity then feeds continued growth and employment. Without intervention, Keynesian theorists believe, this cycle is disrupted and market growth becomes more unstable and prone to excessive fluctuation. Keeping interest rates low is an attempt to stimulate the economic cycle by encouraging businesses and individuals to borrow more money. When borrowing is encouraged, businesses and individuals often increase their spending. This new spending stimulates the economy. Lowering interest rates, however, does not always lead directly to economic improvement.

Keynesian economists focus on lower interest rates as a solution to economic woes, but they generally try to avoid the zero-bound problem. As interest rates approach zero, stimulating the economy by lowering interest rates becomes less effective because it reduces the incentive to invest rather than simply hold money in cash or close substitutes like short term Treasuries. Interest rate manipulation may no longer be enough to generate new economic activity if it cannot spur investment, and the

attempt at generating economic recovery may stall completely. This is known as a liquidity trap.

When lowering interest rates fails to deliver results, Keynesian economists argue that other strategies must be employed, primarily fiscal policy. Other interventionist policies include direct control of the labor supply, changing tax rates to increase or decrease the money supply indirectly, changing monetary policy, or placing controls on the supply of goods and services until employment and demand are restored.

Views on trade imbalance

In the last few years of his life, John Maynard Keynes was much preoccupied with the question of balance in international trade. He was the leader of the British delegation to the United Nations Monetary and Financial Conference in 1944 that established the Bretton Woods system of international currency management. He was the principal author of a proposal – the so-called Keynes Plan – for an International Clearing Union. The two governing principles of the plan were that the problem of settling outstanding balances should be solved by 'creating' additional 'international money', and that debtor and creditor should be treated almost alike as disturbers of

equilibrium. In the event, though, the plans were rejected, in part because "American opinion was naturally reluctant to accept the principle of equality of treatment so novel in debtor-creditor relationships".

The new system is not founded on free-trade (liberalization of foreign trade) but rather on regulating international trade to eliminate trade imbalances. Nations with a surplus would have a powerful incentive to get rid of it, which would automatically clear other nations deficits Keynes proposed a global bank that would issue its own currency - the banker - which was exchangeable with national currencies at fixed rates of exchange and would become the unit of account between nations, which means it would be used to measure a country's trade deficit or trade surplus. Every country would have an overdraft facility in its banker account at the International Clearing Union. He pointed out that surpluses lead to weak global aggregate demand – countries running surpluses exert a "negative externality" on trading partners, and posed far more than those in deficit, a threat to global prosperity. Keynes thought that surplus countries should be taxed to avoid trade imbalances. In *"National Self-Sufficiency"* *The*

Yale Review, Vol. 22, no. 4 (June 1933), he already highlighted the problems created by free trade.

His view, supported by many economists and commentators at the time, was that creditor nations may be just as responsible as debtor nations for disequilibrium in exchanges and that both should be under an obligation to bring trade back into a state of balance. Failure for them to do so could have serious consequences. In the words of Geoffrey Crowther, then editor of *The Economist*, "If the economic relationships between nations are not, by one means or another, brought fairly close to balance, then there is no set of financial arrangements that can rescue the world from the impoverishing results of chaos." These ideas were informed by events prior to the Great Depression when – in the opinion of Keynes and others – international lending, primarily by the U.S., exceeded the capacity of sound investment and so got diverted into non-productive and speculative uses, which in turn invited default and a sudden stop to the process of lending.

Influenced by Keynes, economic texts in the immediate post-war period put a significant emphasis on balance in trade. For example, the second edition of the popular introductory textbook, *An Outline of Money*, devoted the last three of its ten chapters to questions of

foreign exchange management and in particular the 'problem of balance'. However, in more recent years, since the end of the Bretton Woods system in 1971, with the increasing influence of Monetarist schools of thought in the 1980s, and particularly in the face of large sustained trade imbalances, these concerns – and particularly concerns about the destabilizing effects of large trade surpluses – have largely disappeared from mainstream economics discourse and Keynes' insights have slipped from view. They are receiving some attention again in the wake of the financial crisis of 2007–08.

POSTWAR KEYNESIANISM

Keynes's ideas became widely accepted after World War II, and until the early 1970s, Keynesian economics provided the main inspiration for economic policy makers in Western industrialized countries. Governments prepared high quality economic statistics on an ongoing basis and tried to base their policies on the Keynesian theory that had become the norm. In the early era of social liberalism and social democracy, most western capitalist countries enjoyed low, stable unemployment and modest inflation, an era called the Golden Age of Capitalism.

In terms of policy, the twin tools of post-war Keynesian economics were fiscal policy and monetary policy. While these are credited to Keynes, others, such as economic historian David Colander, argue that they are, rather, due to the interpretation of Keynes by Abba Lerner in his theory of functional finance, and should instead be called "Lernerian " rather than "Keynesian" .Through the 1950s, moderate degrees of government demand leading industrial development, and use of fiscal and monetary counter-cyclical policies continued, and reached a peak in the "go go" 1960s, where it seemed to many Keynesians that prosperity was now permanent. In 1971, Republican US President Richard Nixon even proclaimed "I am now a Keynesian in economics."

Beginning in the late 1960s, a new classical macroeconomics movement arose, critical of Keynesian assumptions (see sticky prices), and seemed, especially in the 1970s, to explain certain phenomena better. It was characterized by explicit and rigorous adherence to microfoundations, as well as use of increasingly sophisticated mathematical modelling. With the oil shock of 1973, and the economic problems of the 1970s, Keynesian economics began to fall out of favour. During this time, many economies experienced high and rising

unemployment, coupled with high and rising inflation, contradicting the Phillips curve's prediction. This stagflation meant that the simultaneous application of expansionary (anti-recession) and contractionary (anti-inflation) policies appeared necessary. This dilemma led to the end of the Keynesian near-consensus of the 1960s, and the rise throughout the 1970s of ideas based upon more classical analysis, including monetarism, supply-side economics, and new classical economics.

INFLUENCE OF KEYNESIAN THEORYS

In July 1944 representatives from 45 countries met at Bretton Woods in New Hampshire, USA, to discuss the post-war establishment of major international institutions whose purpose would be to facilitate international cooperation and increasing international economic integration and development, thereby improving the stability of the world economy. A major concern of the Bretton Woods delegates was to help prevent a recurrence of the disastrous events and consequences of economic mismanagement that had occurred during the interwar years. The outcome of the meeting was the creation of what John Maynard Keynes labelled the 'Bretton Woods twins', the International Monetary Fund (IMF) and the

International Bank for Reconstruction and Development (IBRD), now known as the World Bank.

While the main objective of the World Bank is to focus on long-term economic development and poverty reduction issues, the main objective of the IMF, as originally set out in its Articles of Agreement (Charter), is the shortrun stabilization of the international monetary system. In December 1945, the IMF officially came into existence when 29 countries joined, and it finally began financial operations on 1 March 1947. The World Bank began formal operations on 25 June 1946. In addition, the General Agreement on Tariffs and Trade (GATT) was established in 1947, with the main purpose to promote trade liberalization by encouraging and facilitating the lowering of trade barriers. In a series of eight negotiating rounds before the current Doha Round, GATT succeeded in significantly cutting tariffs and reducing other barriers to trade. The GATT was never established as a formal institution but was set up as an interim device which would operate until the establishment of an international trade organization (ITO). In 1995 this was finally achieved with the establishment of the World Trade Organization (WTO).

Keynes's work on British war finance and his quest to 'save Britain from financial ruin at the hands of the US at the end of the war' pushed him towards a sophisticated understanding of the emerging post-war international economic system. By 1945 Britain's economic and financial position was catastrophic. In response to this crisis Keynes's work during the last few years of his life created international macroeconomics and this contribution is 'as important as any of Keynes's achievements as an economist' (Vines, 2003, p. 339). Keynes's wartime work builds on his earlier contributions to international finance contained in *Indian Currency and Finance* (1913), *A Tract on Monetary Reform* (1923), *The Economic Consequences of the Peace* (1919), *The Economic Consequences of Mr. Churchill* (1925), and *A Treatise on Money* (1930).

Keynes' advice on ending the Great Depression was rejected. President Roosevelt tried countless other approaches, all of which failed. Almost all economists agree that World War II cured the Great Depression; Keynesians believe this was so because the U.S. finally began massive public spending on defence. This is a large part of the reason why "wars are good for the economy." Although no one knows the full secret to economic growth

(the world's top economists are still working on this mystery), wars are an economic boon in part because governments always resort to Keynesian spending during them. Of course, such spending need not be directed only towards war — social programs are much more preferable.

In seven short years, under massive Keynesian spending, the U.S. went from the greatest depression it has ever known to the greatest economic boom it has ever known. The success of Keynesian economics was so resounding that almost all capitalist governments around the world adopted its policies. And the result seems to be nothing less than the extinction of the economic depression! Before World War II, eight U.S. recessions worsened into depressions (as happened in 1807, 1837, 1873, 1882, 1893, 1920, 1933, and 1937). Since World War II, under Keynesian policies, there have been nine recessions (1945-46, 1949, 1954, 1956, 1960-61, 1970, 1973-75, 1980-83, 1990-92), and not one has turned into a depression. The success of Keynesian economics was such that even Richard Nixon once declared, “We are all Keynesians now.”

After the war, economists found Keynesianism a useful tool in controlling unemployment and inflation. And this set up a theoretical war between liberals and

conservatives that continues to this day, although it appears that Keynesianism has survived the conservatives' attacks and has emerged the predominant theory among economists. Before describing this battle, however, we should take a look at how the money supply is expanded or contracted.

In the U.S., there are several ways to expand the money supply. The most common is for Federal Reserve banks to buy U.S. debt from commercial banks. The money that commercial banks collect from the sale of these government securities increases the amount they can lend. A second way is to loosen credit requirements, thereby increasing the amount of money generated by the banking system. A third way is to cut the prime lending rate, which is the rate the Federal Reserve loans to commercial banks. To reduce money in the economy, the Fed commits all the opposite actions.

MODULE II:

MONETARISM

Introduction

Monetarism is a school of thought in monetary economics that emphasizes the role of governments in controlling the amount of money in circulation. Monetarist theory asserts that variations in the money supply have major influences on national output in the short run and on price levels over longer periods. Monetarists assert that the objectives of monetary policy are best met by targeting the growth rate of the money supply rather than by engaging in discretionary monetary policy.

Monetarism today is mainly associated with the work of Milton Friedman, who was among the generation of economists to accept Keynesian economics and then criticise Keynes's theory of fighting economic downturns using fiscal policy (government spending). Friedman and Anna Schwartz wrote an influential book, *A Monetary History of the United State, 1867–1960*, and argued "inflation is always and everywhere a monetary phenomenon"

Monetarism is a macroeconomic school of thought that emphasizes (1) long-run monetary neutrality, (2) short-run monetary non neutrality, (3) the distinction

between real and nominal interest rates, and (4) the role of monetary aggregates in policy analysis. It is particularly associated with the writings of Milton Friedman, Anna Schwartz, Karl Brunner, and Allan Meltzer, with early contributors outside the United States including David Laidler, Michael Parkin, and Alan Walters. Some journalists—especially in the United Kingdom—have used the term to refer to doctrinal support of free-market positions more generally, but that usage is inappropriate; many free-market advocates would not dream of describing themselves as monetarists.

An economy possesses basic long-run monetary neutrality if an exogenous increase of Z percent in its stock of money would ultimately be followed, after all adjustments have taken place, by a Z percent increase in the general price level, with no effects on real variables (e.g., consumption, output, relative prices of individual commodities). While most economists believe that long-run neutrality is a feature of actual market economies, at least approximately, no other group of macroeconomists emphasizes this proposition as strongly as do monetarists. Also, some would object that, in practice, actual central banks almost never conduct policy so as to involve exogenous changes in the money supply. This objection is

correct factually but irrelevant: the crucial matter is whether the supply and demand choices of households and businesses reflect concern only for the underlying quantities of goods and services that are consumed and produced. If they do, then the economy will have the property of long run neutrality, and thus the above-described reaction to a hypothetical change in the money supply would occur. Other neutrality concepts, including the natural-rate hypothesis, are mentioned below.

Short-run monetary non neutrality obtains, in an economy with long-run monetary neutrality, if the price adjustments to a change in money take place only gradually, so that there are temporary effects on real output (GDP) and employment. Most economists consider this property realistic, but an important school of macroeconomists, the so-called real business cycle proponents, denies it.

Continuing with our list, real interest rates are ordinary (“nominal”) interest rates adjusted to take account of expected inflation, as rational, optimizing people would do when they make trade-offs between present and future. As long ago as the very early 1800s, British banker and economist Henry Thornton recognized the distinction between real and nominal interest rates, and

American economist Irving Fisher emphasized it in the early 1900s. However, the distinction was often neglected in macroeconomic analysis until monetarists began insisting on its importance during the 1950s. Many Keynesians did not disagree in principle, but in practice their models often did not recognize the distinction and/or they judged the “tightness” of monetary policy by the prevailing level of nominal interest rates. All monetarists emphasized the undesirability of combating inflation by nonmonetary means, such as wage and price control or guidelines, because these would create market distortions. They stressed, in other words, that ongoing inflation is fundamentally monetary in nature, a viewpoint foreign to most Keynesians of the time.

Finally, the original monetarists all emphasized the role of monetary aggregates—such as M1, M2, and the monetary base—in monetary policy analysis, but details differed between Friedman and Schwartz, on the one hand, and Brunner and Meltzer, on the other. Friedman’s striking and famous recommendation was that, irrespective of current macroeconomic conditions, the stock of money should be made to grow “month by month, and indeed, so far as possible, day by day, at an annual rate of X per cent, where X is some number between 3 and

5.” Brunner and Meltzer also favored monetary policy rules but recognized the attractiveness of activist rules that relate money growth rates to prevailing economic conditions. Also, they typically concentrated on the monetary base, adjusted to reflect changes in reserve requirements, whereas Friedman was more concerned with M2 or M1 and, indeed, sought major changes in banking legislation, such as 100 percent reserve requirements on deposits, designed to make the chosen aggregate precisely controllable.

Friedman’s constant-money-growth rule, rather than other equally fundamental aspects of monetarism, attracted the most attention, thereby detracting from the understanding and appreciation of monetarism. In particular, this led to the comparative neglect of Friedman’s crucial “accelerationist” or “natural-rate” hypothesis, according to which there is no long-run trade-off between inflation and unemployment; that is, the long-run Phillips curve is vertical. The no-trade-off view was also promoted by Brunner and Meltzer. Accordingly, it might be argued that the two fundamental monetarist propositions are (1) that cyclical movements in nominal income are primarily attributable to movements in the stock of money, and, (2) that there is no permanent trade-

off between unemployment and inflation. Together, these lead to monetarist-style policy positions.

Monetarism's rise to intellectual prominence began with writings on basic monetary theory by Friedman and other University of Chicago economists during the 1950s, writings that were influential because of their adherence to fundamental neoclassical principles. The most outstanding in this series was Friedman's presidential address to the American Economic Association in 1967, published in 1968 as "The Role of Monetary Policy." In this paper Friedman developed the natural-rate hypothesis (which he had clearly stated two years earlier) and used it as a pillar in the argument for a constant-growth-rate rule for monetary policy. Almost simultaneously, Edmund Phelps, who was not a monetarist, developed a similar no-trade-off theory, and, within a few years, events in the world economy apparently provided dramatic empirical support.

In the late 1970s and early 1980s, after a decade of increasing influence, monetarism's reputation began to decline for three main reasons. One was the growing belief, based on plausible interpretations of experience that money demand is in practice highly "unstable," shifting significantly and unpredictably from one quarter to the next. The second was the rise of rational expectations

economics, which split analysts antagonistic to Keynesian activism into distinct camps. (A majority of monetarists themselves soon embraced the rational expectations hypothesis.) The third was the Federal Reserve's famous "monetarist experiment" of 1979–1982. The latter episode warrants an extended discussion.

During the 1970s, inflation rose in the United States, as well as in many other industrial nations, to levels unprecedented on a multiyear basis during periods of relative peace. This occurred as a consequence of various "shocks"—oil price increases, the Vietnam War, and especially the 1971–1973 demise of the Bretton Woods system of fixed exchange rates (itself caused largely by the failure of the United States to maintain the gold value of the dollar). This demise left central bankers with a major new responsibility; namely, to provide a nominal anchor for national fiat currencies to replace the gold standard. The Federal Reserve announced several times during the 1970s that it intended to bring inflation under control, but various attempts were unsuccessful. Then, on October 6, 1979, the Fed, under Paul Volcker's chairmanship, announced and put into effect a new attempt involving drastically revised operating procedures that had some prominent features in common with

monetarist recommendations. In particular, the Fed would try to hit specified monthly targets for the growth rate of M1, with operating procedures that emphasized control over a narrow and controllable monetary aggregate, nonborrowed reserves (i.e., bank reserves minus borrowings from the Fed). The M1 targets were intended to bring inflation down from double-digit levels to unspecified but much lower values.

In retrospect, the events that occurred from October 1979 to September 1982 are widely viewed as the crucial beginning of a necessary and successful attack on inflation that led, eventually, to the worldwide low-inflation environment of the 1990s. At the time, however, the “experiment” seemed anything but successful to many Americans. Short-term interest rates jumped dramatically in late 1979 under the tightened conditions, and 1980 witnessed a major fall in output in one quarter followed by a major jump in the next, due primarily to the imposition, and then removal, of credit controls. Finally, in 1981 and into the middle of 1982, a sustained period of monetary stringency brought about the deepest recession since the Great Depression of the 1930s and began to bring inflation down, more rapidly than many economists anticipated, toward acceptable values.

Many critics characterized the “experiment” as a macroeconomic disaster. Some believed, moreover, that it provided strong and definitive evidence invalidating monetarism—partly by showing how undesirable it was to have money growth targets and partly in showing how poor are operating procedures for controlling M1 money growth by means of tight control of a narrow monetary aggregate. Monetarists argued that the episode was actually not monetarist in its design because growth rates of M1 fluctuated very widely on a month-to-month basis; the operating procedures in place were, because of lagged reserve requirements, extremely poorly designed for the control of M1; and the Fed never forswore discretionary responses to current cyclical conditions. It now seems clear that the Fed’s use of a narrow monetary aggregate for week-to-week control was highly effective in terms of public relations. The reason was that it permitted the Fed to escape political responsibility for the resulting high and, therefore, unpopular interest rate levels by claiming that these were simply the consequence of market forces. At the same time, by adopting a putatively monetarist approach, the Fed could at least, even if the episode was a failure, discredit monetarism and the Fed’s annoying monetarist critics. As matters played out, the episode was

soon seen as a strategic success, despite temporary unhappiness, and monetarism was discredited as well!

What is left today of monetarism? While some disagreement remains, certain things are clear. Interestingly, most of the changes to Keynesian thinking that early monetarists proposed are accepted today as part of standard macro/monetary analysis. After all, the main proposed changes were to distinguish carefully between real and nominal variables, to distinguish between real and nominal interest rates, and to deny the existence of a long-run trade-off between inflation and unemployment. Also, most research economists today accept, at least tacitly, the proposition that monetary policy is more potent and useful than fiscal policy for stabilizing the economy. There is some academic support, and a bit in central bank circles, for the real-business-cycle suggestion that monetary policy has no important effect on real variables, but this idea probably has marginal significance. It is hard to believe that the major recession of 1981–1983 in the United States was not caused largely by the Fed’s deliberate tightening of 1981—a tightening that shows up in ex-post real interest rates and in M1B growth rates as adjusted by the Fed at the time to take account of major institutional changes.

In 2005, most academic specialists in monetary economics would probably describe their orientation as new Keynesian. Also, monetary aggregates currently play a small or nonexistent role in the monetary policy analysis of academic and central-bank economists. In terms of its underlying scientific rationale, however, today's mainstream analysis is much closer to that of the monetarist than the Keynesian position of, for example, 1956–1978. In addition to the points noted above, current thinking clearly favors policy rules in contrast to “discretion,” however defined, and stresses the central importance of maintaining inflation at quite low rates. It is only in its emphasis on monetary aggregates that monetarism is not being widely espoused and practiced today.

The following are the important theories and arguments of the monetarists.

FRIEDMAN’S RESTATEMENT OF THE QUANTITY THEORY OF MONEY

The pure theory of the demand for money put forward by Friedman is in his essay “The Quantity Theory of Money: A Restatement”. Friedman considered the question of demand for money to be a highly significant

aspect of the new quantity theory, or as itself being the quantity theory.

The theory is based on the principle that an individual's demand for money is constrained by his or her resources and is determined by equating at the margin the returns on money holdings with the returns on alternative assets. The return on money derives from its intangible services in facilitating exchanges and providing security against bankruptcy; the returns on other assets are, in general, measurable in nominal or real terms. Friedman makes several simplifying assumptions to arrive at a demand function for nominal money balances of the following form

$$MD = p f(rB, rE, p^\bullet, h, y, u)$$

The variables have the following meaning and rationale: MD is planned demand for nominal money balances and p is the absolute price level. By dividing through with p, the equation can be expressed as a demand function for real balances with the same variables within the brackets. The variables rB, rE and p[•] reflects the nominal yields on assets that could be held as alternative to money. The variable rB is the rate of interest on bonds, and rE is the market yield of equities. The variable p[•] is the percentage rate of change of the price level. It

therefore reflects the nominal rate of returns on holdings of goods as assets. These goods may include automobiles, houses, or machinery.

The existence of the first three variables (r_B , r_E , p^*) arises because it is assumed that for households, the alternative forms in which wealth can be held are money, bonds, equities and goods. The demand for nominal money balances is determined by equating the returns on each at the margin. If the rate of returns on bonds, equities, and goods rises, the demand for nominal balances would fall to the point at which their marginal return would equal the new returns on these three alternative assets.

Comparing the returns on alternative assets only enables the individual to decide on the proportion of total wealth to be held in the form of money. It does not determine the level of desired money balances. Introduction of the wealth does permit this. Real income, y , enters as a representative of this wealth constraint.

An important point to be noted is that an individual's income does not only consist of the yield on financial and physical assets. For vast majority of persons, income is derived from work. Consequently, the return on human wealth should enter the demand function

for money. Friedman, however, argues that the possibilities of substituting between human wealth and other assets (including money) are severely restricted, at least in the short run. Therefore the return on human wealth is not a relative return that is relevant to the decision at any instant on how much money one should hold. Instead, the variable 'h' is introduced as a measure of the ratio between human wealth and all other forms of wealth, a ratio that is fixed and not, at any instant, the subject of a choice relevant to money holdings.

Finally, the variable 'u' reflects the change in tastes and preferences, and these, to some extent, may be linked to objective circumstances, such as uncertainty and geographic mobility. Friedman's theory of the individual's demand for money is, therefore, constructed on the principle of utility maximization. Given tastes, individuals maximize utility subject to their budget constraints (approximated by y) and the relative returns on feasible assets.

This demand function can also be written in the form of a velocity equation

$$V = \frac{py}{M^D} = g(r_B, r_E, p^*, h, y, u)$$

Indicating that the desired velocity of money is a stable function of those same variables.

THE NATURAL RATE OF UNEMPLOYMENT HYPOTHESIS

Cynics have observed that whenever an apparently stable economic relationship is discovered and then used for policy purposes, it promptly breaks down! The most famous example of this is probably the Phillips curve. The relationship between inflation and unemployment in the United Kingdom from 1960 to 1981 had shown pretty conclusively that the Phillips curve has not been a stable relationship; over the last fifteen years inflation and unemployment have both shown a marked secular increase. Other industrialized economies have displayed a similar tendency, though the levels of inflation and unemployment of some of these economies have remained below British rates.

The breakdown of the empirical Phillips relationship in the late 1960s coincided with new theoretical work, notably by Friedman ['The Role of Monetary Policy', *American Economic Review*, 58 (March 1968)] and Phelps ['Phillips Curves, Expectations of Inflation, and Optimal Unemployment over Time', *Economica*, 34 (August 1967)], which denied the

existence of a permanent trade-off between inflation and unemployment. The starting-point of this analysis is that microeconomic theory posits a relationship between the level of excess labour demand and the rate of change of real wages, not money wages as suggested by Phillips.

Instead, the Phillips relation should be

$$\frac{\dot{w}}{w} = f(U)$$

where $\dot{w}/w = (1/w)(dw/dt)$ = rate of increase of the real wage rate. By definition, the actual rate of change of real wages equals the rate of change of money wages, \dot{W}/W , minus the rate of inflation, \dot{P}/P :

$$\frac{\dot{w}}{w} = \frac{\dot{W}}{W} - \frac{\dot{P}}{P}$$

When workers and employers set the money wage rate, each party is really concerned with the real wage rate at which labour will be hired. The perceived real wage rate implied by a particular money wage rate depends on what is the expected rate of inflation. Unless the economy is in long-run equilibrium so that expectations are always realised, there will be some divergence between the expected rate of inflation and the actual rate of inflation. This means that the appropriate relationship between the

rate of change of the real wage rate anticipated by a worker and the rate of change in the money wage rate is

$$\frac{\dot{w}}{w} = \frac{\dot{W}}{W} - E \left(\frac{\dot{P}}{P} \right)$$

where $E(\dot{P}/P)$ = the expected rate of inflation. If workers are rational, they fully adjust the increase in money wages for the expected increase in prices to obtain the resulting change in the real wage rate upon which they base their decision as to whether to remain in their present employment or to continue job search if unemployed, as the case may be. If workers do not fully take into account the inflation that they expect to occur when estimating their real income from their money income, they are said to have 'money illusion'. Behaviour due to money illusion is quite distinct from incorrect expectations. One can overestimate one's future real income because a higher rate of inflation occurs than one expected. This is distinct from money illusion, which would cause one not to act in response to one's future real income, even though one is correctly anticipating the rate of inflation that will occur. A coefficient, (α , is subsequently attached to the price expectations variable. It will equal 1.0 if employees are both rational (that is, they do not suffer from money

illusion) and can adjust fully their money wages to compensate for expected price increases.

If from equation we substitute $f(U)$ for \dot{w}/w and rearrange terms we get

$$\frac{\dot{W}}{W} = f(U) + \alpha E \left(\frac{\dot{P}}{P} \right)$$

where ($\alpha = 1$ if, given the rate of unemployment, workers completely adjust their money wage to compensate for expected inflation, and $0 \leq \alpha < 1$ if they only partially adjust their money wage. This equation is known as the expectations-augmented Phillips curve. The original Phillips relationship, shown in Figure 18.1, did not contain the $\alpha E (\dot{P}/P)$ term since it was based on the implicit assumption of a zero expected rate of inflation. When the rate of inflation was very low such an assumption was reasonably plausible. Once a positive rate of inflation becomes anticipated and given that $\alpha \neq 0$, then the rate of increase of money wage rates at all levels of employment will adjust to reflect anticipations about inflation. In terms of the Phillips-curve diagram, this means an upward shift in the entire relationship. There is therefore a whole family of short-run Phillips curves, each one corresponding to a given rate of expected inflation.

Friedman proceeded to argue that the expectations-augmented Phillips curve would shift in such a way that in the long run a higher rate of inflation would result in no change in unemployment. This argument is explained in Figure 18.4 and it assumes that $\alpha = 1$. We start with an economy which has a stable price level and constant real and money wages. We are simplifying by assuming no growth in labour productivity. The short run Phillips curve for a zero rate of expected inflation is PC_0 . Since the price level is stable the unemployment level is UN . This level of unemployment is termed the natural rate of unemployment. It is defined as that rate of unemployment which is consistent with labour-market equilibrium and at which the price level could be stable. The natural rate of unemployment is determined by the real factors which affect the amount of frictional and structural unemployment in the economy.

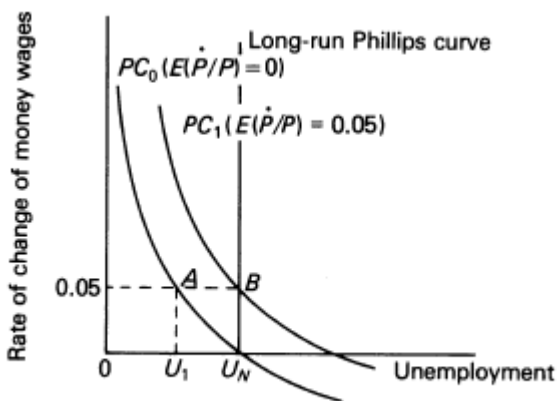


FIGURE 18.4 *The expectations-augmented Phillips curve*

The government has been told that there is a trade-off between unemployment and inflation. It therefore chooses to keep the economy at point A of the short-run Phillips curve PC_0 by expansionary policies which increase the money supply. The rate of inflation now rises to 5 per cent and the level of unemployment falls to U_1 . We need an explanation of why unemployment falls and output rises when the rate of inflation increases. In the neoclassical interpretation of the Phillips relationship this occurs only because the inflation is unanticipated. Since demand has increased firms start raising prices and bidding up the money wage rate to attract more labour. Because workers' expectations of inflation are below the actual rate of inflation, they think that the higher money wages now being offered means that real wages have risen. The supply of labour therefore increases. When

inflation increases but expected inflation lags behind workers are deceived into offering to work for a lower real wage. The demand for labour increases as firms moves down the demand for labour schedule. Unemployment falls and output rises as the economy moves up the short-run Phillips curve PC₀.

As expectations adjust towards the actual rate of inflation, workers realize that real wages are lower than they had anticipated and therefore require a more rapid increase in the money wage rate. The supply of labour schedule shifts back up until it regains its initial long-run position once expected and actual inflation are equal. As the supply of labour shifts back to its original position, the short-run Phillips curve also shifts outwards because the expected rate of inflation is rising. When expectations have fully adjusted to the new higher rate of inflation the short-run Phillips curve in Figure 18.4 has shifted up to PC₁ which is its position when the expected rate of inflation is 5 per cent. The economy is now at point B in Figure 18.4. Unemployment is back to its natural rate but there is now a 5 per cent rate of inflation. (This requires a permanently higher rate of increase in the money supply.) The idea that there is no way in which the rate of unemployment can be permanently held at a different level

to the natural rate of unemployment is known as the natural-rate hypothesis (NRH). Another way of stating the same point is that the long-run Phillips curve is vertical.

The Monetary Approach to Balance of Payments and Exchange Rates

The PPP theory indicates that the exchange rates are closely related to the level of prices in different countries. But it does not explain what determines national price level or the rate at which it changes, that is, the inflation rate. Many economists believe that the money supply and its growth rate determine the price level and inflation rate. They suggest that money supplies in different countries, through their links to national price levels and inflation rates are closely linked to exchange rate in the long run

Monetary approach was started towards the end of the 1960s by Robert Mundell and Harry Johnson and became fully developed during 1970s. The monetary approach views the balance of payment as an essentially a monetary phenomenon. Not only balance of payment is measured in monetary terms, money plays the crucial role in the long run both as a disturbance and as an adjustment in the country's balance of payments.

The Monetary Approach under Fixed Exchange Rates

The relationship between money and national price level and inflation rate follows from the relationship between money supply and money demand. The monetary approach begins by postulating that the demand for nominal money balances is positively related to the level of nominal national income and is stable in long run. The monetarist use the quantity theory of money as the basis of money demand function, which can be written as,

$$M_d = kPy$$

Where 'M_d' is the demand for nominal money balances, 'P' is the domestic price level, 'y' is the real national income and 'k' is a parameter that measures the sensitivity of money demand to changes in national income. k is also equal to 1/v, where v is the velocity of circulation of money. With v and thus k is assumed to be constant, M_d is a stable and positive function of the domestic price level and real national income

On the other hand, the country's supply of money is given by

$$MS = m (D + F)$$

Where 'MS' is the nation's total supply of money, 'm' is the money multiplier, 'D' is the domestic component of the country's monetary base and 'F' is the foreign component of the country's monetary base. In fact,

'D' is the domestic credit created by the country's monetary authorities or the domestic assets backings in the country's money supply. 'F' refers to the foreign reserves of the country. 'D + F' is called the monetary base of the country or high-powered money. For simplicity, 'm' is assumed to be constant.

Starting from a condition of equilibrium where $M_d = MS$, an increase in the demand for money can be satisfied either by an increase in the country's domestic monetary base (D) or an inflow of an international reserves or BoP surplus (F). If the country's monetary authorities do not increase D, the excess demand for money will be satisfied by an increase in F. On the other hand, an increase in the domestic component of the country's monetary base (D) and money supply (MS), in the face of unchanged money demand (M_d) flows out of the country leading to a fall in F and a deficit in the country's BoP.

Thus, a surplus in the country's BoP results from an excess in the stock of money demanded that is not satisfied by the domestic monetary authorities. On the other hand, a deficit in BoP results from an excess in the stock of money supplied that is not eliminated or corrected by the country's monetary authorities. Thus, the country's

BoP surplus or deficit is temporary and self correcting in long run. That is, after the excess demand or supply of money is eliminated through an inflow or outflow of funds. Therefore, a country has no control over its money supply under fixed exchange rate system in the long run. That is, the size of country's money supply will be the one that is consistent with equilibrium in its BoP in the long run.

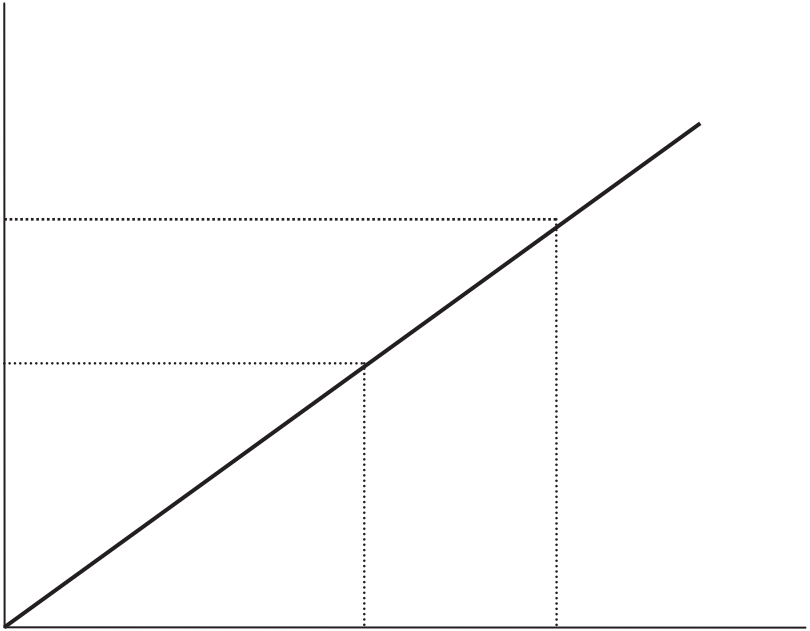
The Monetary Approach under Flexible Exchange Rates

Under flexible exchange rate system, BoP disequilibrium are immediately corrected by automatic changes in exchange rates without any international flow of money. Thus, under flexible exchange rate system, the country retains dominant control over its money supply and monetary policy.

Adjustment takes place as a result of the change in domestic prices that accompanies the change in the exchange rate. For example, a deficit in the BoP resulting from an excess money supply leads to an automatic depreciation of the country's currency which causes domestic prices to rise. Therefore, the demand for money will rise sufficiently to absorb the excess supply of money and automatically eliminate the BoP deficit. On the other

hand, a surplus in the BoP resulting from an excess demand for money automatically leads to an appreciation of the country's currency. This leads to a reduction in the domestic prices, thus eliminating the excess demand for money and BoP surplus. Thus, under flexible exchange rate system, BoP disequilibrium is immediately corrected by an automatic change in exchange rates and without any international flow of money or reserves so that the country retains dominant control over its money supply and domestic monetary policy.

According to the monetary approach, a currency depreciation results from excessive money growth in the country over time, while appreciation results from an inadequate money growth in the country. In other words, a country facing greater inflationary pressure than other countries will find its currency depreciating or its exchange rate rising and vice versa. This is shown below.



Line OC shows the relationship between the money supply in India relative to the money supply in the United States and Rupees-Dollar exchange rate. It shows that as relative money supply in India increases from S_1 to S_2 , the exchange rate changes from R_1 to R_2 leading to a depreciation in the value of Rupee against Dollar.

Monetary Approach to Exchange Rate Determination

The monetary model is based on three key assumptions. Firstly, there is a stable money demand function. Secondly, prices are flexible and markets operate perfectly so that there is vertical aggregate supply schedule reflecting full employment. Thirdly, there is

purchasing power parity theory so that exchange rate adjusts to the ratio of domestic prices level and foreign price level.

The equation for the demand for money in the home country is given by

$$M_d = kPy \dots\dots\dots (1)$$

This being the case we can postulate the demand for money in the foreign economy as

$$M_d^* = k^*P^*y^* \dots\dots\dots (2)$$

Where M_d^* denotes the foreign money demand, k^* is the foreign nominal income elasticity of demand for money, P^* is the foreign price level and y^* is the real foreign income.

The equilibrium exchange rate is determined by PPP, so that

$$R = \frac{P}{P^*} \dots\dots\dots (3)$$

In equilibrium, money demand is equal to money supply in each country so that

$$M_s = M_d \text{ and } M_s^* = M_d^* \dots\dots\dots (4)$$

This being the case we can substitute M_s for M_d in equation (1) and M_s^* for M_d^* in equation (2) and dividing equation (1) and equation (2) to get the relative money supply function as

$$M_s^* = kPy \quad (5)$$

$$M_s^* = k^*P^*y^*$$

Since $P/P^* = R$ because of PPP, we can rewrite equation (5) as

$$M_s^* = kRy$$

(6)

$$M_s^* = k^*y^*$$

Solving the equation (6) for the exchange rate (R), we have

$$R = M_s / M_s^* \quad \text{or} \quad R = M_s k^* y^* / M_s^* k y \quad (7)$$

The equation (7) says that the exchange rate is determined by the relative supply and demand for the different national money stock. An increase in the domestic money stock (M_s) relative to the foreign money stock (M_s^*) will lead to a rise in the exchange rate or depreciation of the home currency. An increase in the domestic income (y) relative to the foreign income leads to a fall in exchange rate or appreciation of home currency. This is because of the reason that an increase in the domestic income leads to an increased transaction demand for the home currency leading to an appreciation.

Several important things are needed to be noted with equation (7). Firstly, it depends on the PPP theory and law

of one price (equation 3). Secondly, it is derived from the demand for nominal money balances (equations 1&2). Thirdly, the exchange rate adjusts to clear money markets in each country without any flow or change in reserves.

Expectations, Interest Differentials and Exchange Rates

Exchange rate depends not only on the relative growth of the money supply and real income in various countries but also on the inflation expectations and expected changes in exchange rates. An expected change in exchange rate will also lead to an immediate actual change in the exchange rate by an equal percentage.

Monetarists assume that domestic and foreign bonds are perfect substitutes so that there is no additional risk of holding the foreign bond with respect of holding the domestic bond. The interest rate differentials between two countries will always equal the expected change in exchange rate between the two currencies. That is

$$i - i^* = EA$$

Where, 'i' is the interest rate in the home country (say, India), 'i*' is the interest rate in the foreign country (say, US) and 'EA' is the expected percentage appreciation per year of the foreign currency with respect to the home currency. For example, if $i = 6\%$ and $i^* = 5\%$, then expectation must be that the Dollar will appreciate by

1% at an annual basis in order to make the returns on investing in US equal to the return on investing in India and thus be at “uncovered interest parity”. Like the PPP theory and the law of one price, the uncovered interest arbitrage condition is an integral part of the monetary approach and exchange rate determination.

Conclusion

Monetarism has therefore made several important and lasting contributions to modern macroeconomics. First, the expectations-augmented Phillips curve analysis, the view that the long-run Phillips curve is vertical and that money is neutral in the long run are all now widely accepted and form an integral part of mainstream macroeconomics. Second, a majority of economists and central banks emphasize the rate of growth of the money supply when it comes to explaining and combating inflation over the long run. Third, it is now widely accepted by economists that central banks should focus on controlling inflation as their primary goal of monetary policy. Interestingly, since the 1990s inflation targeting has been adopted in a number of countries. What has not survived the monetarist counter- revolution is the ‘hard core’ belief once put forward by a number of leading monetarists that the authorities should pursue a non-

contingent 'fixed' rate of monetary growth in their conduct of monetary policy. Evidence of money demand instability (and a break in the trend of velocity, with velocity becoming more erratic), especially since the early 1980s in the USA and elsewhere, has undermined the case for a fixed monetary growth rate rule. Finally, perhaps the most important and lasting contribution of monetarism have been to persuade many economists to accept the idea that the potential of activist discretionary fiscal and monetary policy is much more limited than conceived prior to the monetarist counter-revolution.

Monetarist view of Fiscal and Monetary policy

Monetarists believe monetary policy is more effective than fiscal policy (government spending and tax policy). Stimulus spending adds to the money supply, but it creates a deficit adding to a country's sovereign debt. That will increase interest rates. Monetarists say that central banks are more powerful than the government because they control the money supply. They also tend to watch real interest rates rather than nominal rates. Most published rates are nominal rates, while real rates remove the effects of inflation. Real rates give a truer picture of the cost of money.

MODULE III

NEW CLASSICAL MACROECONOMICS, REAL BUSINESS CYCLE SCHOOL AND SUPPLY SIDE ECONOMICS

Introduction

During the early 1970s there was a significant renaissance of the belief that a market economy is capable of achieving macroeconomic stability, providing that the visible hand of government is prevented from conducting misguided discretionary fiscal and monetary policies. In particular the ‘Great Inflation’ of the 1970s provided increasing credibility and influence to those economists who had warned that Keynesian activism was both over-ambitious and, more importantly, predicated on theories that were fundamentally flawed. To the Keynesian critics the events of the Great Depression together with Keynes’s theoretical contribution had mistakenly left the world ‘deeply sceptical about self-organising market systems’ the orthodox Keynesian insistence that relatively low levels of unemployment are achievable via the use of expansionary aggregate demand policies was vigorously challenged by Milton Friedman, who launched a

monetarist ‘counter-revolution’ against policy activism during the 1950s and 1960s. During the 1970s another group of economists provided a much more damaging critique of Keynesian economics. Their main argument against Keynes and the Keynesians was that they had failed to explore the full implications of *endogenously* formed expectations on the behaviour of economic agents. Moreover, these critics insisted that the only acceptable way to incorporate expectations into macroeconomic models was to adopt some variant of John Muth’s (1961) ‘rational expectations hypothesis’.

Following Thomas Sargent’s (1979) contribution, rational expectationists, who also adhered to the principle of equilibrium theorizing, became known collectively as the new classical school. As the label infers, the new classical school has sought to restore classical modes of equilibrium analysis by assuming continuous market clearing within a framework of competitive markets. The assumption of market clearing, which implies perfectly and instantaneously flexible prices, represents the most controversial aspect of new classical theorizing. According to Hoover (1992), the incorporation of this assumption represents the classical element in their thinking, namely a firm conviction ‘that the economy

should be modelled as an economic equilibrium’. Thus, to new classical theorists, ‘the ultimate macroeconomics is a fully specified general equilibrium microeconomics’. As Hoover notes, this approach implies not only the revival of classical modes of thought but also ‘the euthanasia of macroeconomics!

The Structure of New Classical Models

The new classical school emerged as a distinctive group during the 1970s and, as we have already noted, the key figure in this development was Robert E. Lucas Jr. The new classical approach as it evolved in the early 1970s exhibited several important features:

1. a strong emphasis on underpinning macroeconomic theorizing with neoclassical choice-theoretic microfoundations within a Walrasian general equilibrium framework;
2. the adoption of the key neoclassical assumption that all economic agents are rational; that is, agents are continuous optimizers subject to the constraints that they face, firms maximize profits and labour and households maximize utility;
3. agents do not suffer from money illusion and therefore only real magnitudes (relative prices) matter for optimizing decisions;

4. Complete and continuous wage and price flexibility ensure that markets continuously clear as agents exhaust all mutually beneficial gains from trade, leaving no unexploited profitable opportunities. Given these assumptions, changes in the quantity of money should be neutral and real magnitudes will be independent of nominal magnitudes. However, empirical evidence shows that there are positive correlations (at least in the short run) between real GDP and the nominal price level (an upward-sloping aggregate supply curve), between changes in the nominal money supply and real GDP, and negative correlations between inflation and unemployment (a Phillips curve); that is, empirically money does not appear to be neutral in the short run. Solving this puzzle between the neutrality of money predicted by classical /neoclassical theory and empirical evidence showing non-neutralities would be a considerable intellectual achievement (Zijp, 1993, refers to this as the ‘Lucas problem’). Lucas’s (1972a) seminal paper, ‘Expectations and the Neutrality of Money’, was just such an achievement. Lucas’s key insight was to change the classical assumption that

economic agents have perfect information to an assumption that agents have imperfect information.

We can sum up the main elements of the early new classical approach to macroeconomics as the joint acceptance of three main sub-hypotheses involving (i) the rational expectations hypothesis; (ii) the assumption of continuous market clearing; and (iii) the Lucas ('surprise') aggregate supply hypothesis. In the discussion of these hypotheses individually in what follows, the reader should bear in mind that although new classicists accept all three hypotheses (see Figure 5.1), it is possible for economists of different persuasions to support the rational expectations hypothesis without necessarily accepting all three together.

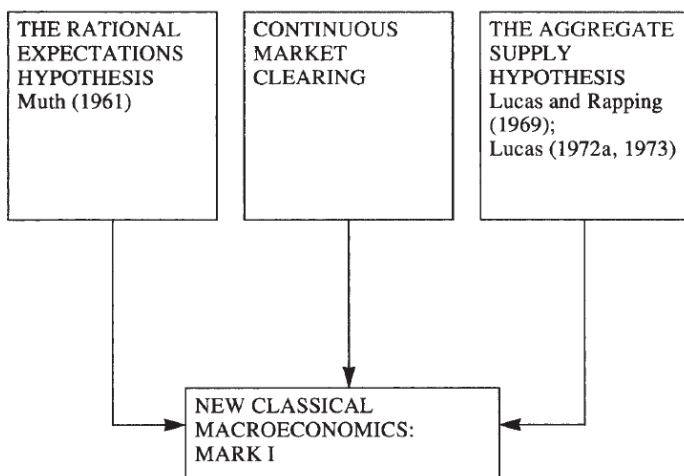


Figure 5.1 The structure of new classical models

The rational expectations hypothesis

One of the central tenets underlying new classical macroeconomics is the rational expectations hypothesis (REH) associated with the work of John Muth (1961) initially in the context of microeconomics. It is, however, interesting to note that Keuzenkamp (1991) has suggested that Tinbergen was a precursor to Muth, having presented a model of rational expectations nearly 30 years earlier. We should also note that it was Alan Walters (1971) who first applied the idea of what he called ‘consistent expectations’ to macroeconomics. However, it was John Muth’s (1961) seminal paper that proved to be most influential on the research of the young new classical Turks during the early 1970s. In his seminal article, Muth suggested ‘that expectations since they are informed predictions of future events are essentially the same as the predictions of the relevant economic theory’. Expectations, which are subjective, are fundamental to the behaviour of economic agents and all economic activities have an informational/expectational dimension. For example, expectations of the future value of economic variables will clearly influence demand and supply decisions. As Carter and Maddock (1984) note, ‘since

virtually all economic decisions involve taking actions now for uncertain rewards in the future, expectations of the future are crucial in decision making'. An obvious example where expectations of inflation will influence behaviour concerns wage negotiations between trade unions and employers. Should a trade union negotiator underestimate the rate of inflation prevailing over the period of the negotiated wage contract, then workers are likely to find that they have suffered a nominal wage increase, but a real wage cut.

An expectation of the future value of some key economic variable need not be confined to a single predicted value but can more realistically take the form of a probability distribution of outcomes. Therefore, there are two key questions facing macroeconomists with respect to incorporating expectations into macroeconomic models:

1. How do individuals acquire, process and make use of information in order to form expectations of key variables?
2. What form of expectations hypothesis should we use in macroeconomic models?

During the 1970s, the rational expectations hypothesis replaced the adaptive expectations hypothesis as the dominant way of modelling endogenous expectations (in

his *General Theory*, published in 1936, Keynes had stressed the importance of expectations for understanding macroeconomic instability, but in Keynes's theory expectations were exogenous, being driven by 'animal spirits'). One great appeal of the rational expectations hypothesis is that alternative (non-rational) hypotheses of expectations formation involve systematic errors, a situation that does not sit comfortably with the rational calculating agents that populate orthodox neoclassical models.

The rational expectations hypothesis has over the years been presented in the literature in a number of different forms and versions. At the outset it is important to note the distinction between weak and strong versions of the hypothesis. The main idea behind the weak version of the hypothesis is that, in forming forecasts or expectations about the future value of a variable, rational economic agents will make the best (most efficient) use of all publicly available information about the factors which they believe determine that variable. In other words, expectations are assumed to be formed 'rationally' in line with utility-maximizing behaviour on the part of individual economic agents. For example, if economic agents believe that the rate of inflation is determined by

the rate of monetary expansion, they will make the best use of all publicly available information on rates of monetary expansion in forming their expectations of future rates of inflation.

The strong version of the rational expectations hypothesis is taken from Muth's (1961) article and it is the Muthian version that has been taken up by leading exponents of the new classical school and incorporated into their macroeconomic models. In the Muthian 'strong' version, economic agents' subjective expectations of economic variables will coincide with the true or objective mathematical conditional expectations of those variables. Using the example of economic agents' expectations of inflation (\dot{P}_t^e), the rational expectations hypothesis may be expressed algebraically in the following way:

$$\dot{P}_t^e = E(\dot{P}_t | \Omega_{t-1})$$

Where \dot{P}_t is the actual rate of inflation; $E(\dot{P}_t | \Omega_{t-1})$ is the rational expectation of the rate of inflation subject to the information available up to the previous period (Ω_{t-1}). It is important to emphasize that rational expectations does not mean that agents can foresee the future exactly. Rational expectations are not the same as perfect foresight. In order to form a rational expectation of inflation, agents will need to take into account what they believe to be the

'correct' macroeconomic model of the economy. Agents will make errors in their forecasts, since available information will be incomplete. Indeed, this is an essential element of Lucas's monetary surprise model. However, such forecast errors will be unrelated to the information set at the time the expectation (for example of inflation) was formed. With rational expectations, agents' expectations of economic variables on average will be correct, that is, will equal their true value. Furthermore, the hypothesis implies that agents will not form expectations which are systematically wrong (biased) over time. If expectations were systematically wrong, agents would, it is held, learn from their mistakes and change the way they formed expectations, thereby eliminating systematic errors. More formally, the strong version of the rational expectations hypothesis implies that:

$$\dot{P}_t^e = \dot{P}_t + \varepsilon_t$$

where \dot{P}_t^e = expected rate of inflation from t to $t + 1$; \dot{P}_t = actual rate of inflation from t to $t + 1$; and ε_t = random error term, which (i) has a mean of zero, and (ii) is uncorrelated with the information set available at the time when expectations are formed, otherwise economic agents would not be fully exploiting all available information.

In summary, the forecasting errors from rationally formed expectations will (i) be essentially random with a mean of zero; (ii) be unrelated to those made in previous periods, revealing no discernible pattern: that is, they will be serially uncorrelated over time; and (iii) have the lowest variance compared to any other forecasting method. In other words, rational expectations is the most accurate and efficient form of expectations formation.

A number of criticisms have been raised against the rational expectations hypothesis and we now consider three common ones. The first of these concerns the costs (in time, effort and money) of acquiring and processing all publicly available information in order to forecast the future value of a variable, such as inflation. Given the costs involved in acquiring and processing information, it is unlikely that agents would ever use all publicly available information. What proponents of the weak version of the hypothesis suggest is that ‘rational’ economic agents will have an incentive to make the ‘best’ use of all publicly available information in forming their expectations. In other words, agents will have an incentive to use information up to the point where the marginal benefit (in terms of improved accuracy of the variable being forecast) equals the marginal cost (in terms of

acquiring and processing all publicly available information). In this case, expectations would be less efficient than they would be if all available information were used. Furthermore, the weak version of the hypothesis does not require, as some critics have suggested, that all individual agents directly acquire and process available information personally. Economic agents can derive information indirectly from, for example, published forecasts and commentaries in the news media. Given that forecasts frequently differ, the problem then arises of discerning which is the 'correct' view. A far more serious objection concerns the problem of how agents actually acquire knowledge of the 'correct' model of the economy, given that economists themselves display considerable disagreement over this. The issue of whether individual agents operating in decentralized markets will be able to 'learn' the true model of the economy has been the subject of considerable debate. With regard to this particular criticism, it is important to note that the strong version of the hypothesis does not require that economic agents actually know the correct model of the economy. What the hypothesis implies is that rational agents will not form expectations which are systematically wrong over time. In other words, expectations, it is suggested, will

resemble those formed ‘as if’ agents did know the correct model to the extent that they will be unbiased and randomly distributed over time. Critics of the hypothesis are not, however, convinced by arguments such as these and suggest that, owing to such problems as the costs of acquiring and processing all available information, and uncertainty over which is the correct model, it ‘is’ possible for agents to form expectations which are systematically wrong. There is some evidence that agents do make systematic errors in expectations.

A third important criticism, associated in particular with the Post Keynesian school, relates to the problems of expectations formation in a world of fundamental uncertainty. To Keynesian fundamentalists, a major achievement of Keynes was to place the problem of uncertainty at the centre stage of macroeconomics. In the Post Keynesian vision, the world is *non-ergodic*; that is, each historical event is unique and non-repetitive. In such situations the rules of probability do not apply. We are in a world of ‘kaleidic’ change and fundamental discontinuities. Accordingly, Post Keynesians argue that it is important to follow both Keynes (1921) and Knight (1933) and distinguish between situations involving risk and situations involving uncertainty. In situations of risk

the probability distribution is known. In contrast, in situations of uncertainty there is no possibility of formulating any meaningful probability distribution. Because the rational expectations hypothesis assumes that economic agents can formulate probability distributions of outcomes of various economic changes and situations, it belongs to the world of risk. In new classical models the problem of fundamental uncertainty is ignored since Lucas (1977) interprets business cycles as repeated instances of essentially similar events. Hence, in Lucas's ergodic world, meaningful probability distributions of outcomes can be gauged by intelligent and rational economic agents. Unfortunately, according to Post Keynesians, the real world is one characterized by fundamental uncertainty and this means that conclusions built on models using the rational expectations hypothesis are useless. Likewise, the Austrian school are also very critical of the rational expectations hypothesis.

One final point is worth making. The use of the word 'rational' in the presentation of the hypothesis proved to be an important 'rhetorical' weapon in the battle to win the minds of macroeconomists during the 1970s.

Continuous market clearing

A second key assumption in new classical models is that all markets in the economy continuously clear, in line with the Walrasian tradition. At each point of time all observed outcomes are viewed as ‘market-clearing’, and are the result of the optimal demand and supply responses of economic agents to their perceptions of prices. As a result the economy is viewed as being in a continuous state of (short- and long-run) equilibrium. New classical models are in consequence often referred to as ‘equilibrium’ models, where equilibrium is interpreted to mean that all economic agents within a market economy have made choices that optimize their objectives subject to the constraints that they face.

In market-clearing models economic agents (workers, consumers and firms) are ‘price takers’; that is, they take the market price as given and have no market power that could be used to influence price. Firms are operating within a market structure known as ‘perfect competition’. In such a market structure firms can only decide on their optimal (profit-maximizing) output (determined where marginal revenue = marginal cost) given the market determined price. In the absence of externalities the competitive equilibrium, with market

prices determined by the forces of demand and supply, is Pareto optimal and leads to the maximization of total surplus (the sum of producer and consumer surplus). In Figure 5.2(a) we can see that a competitive market-clearing equilibrium (P^* , Q^*) maximizes the total of consumer and producer surplus (equal to area BCE) whereas non-market-clearing prices (output), such as $P_1(Q_1)$ or $P_2(Q_2)$, indicated in Figure 5.2(b), result in a welfare loss indicated by the areas FEI and GEH respectively.

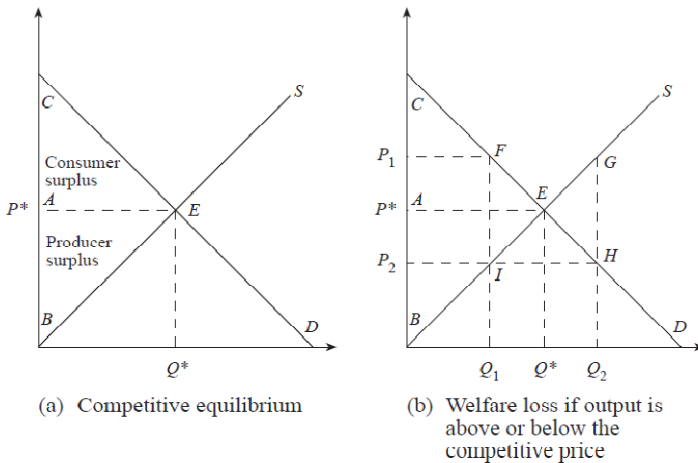


Figure 5.2 The welfare implications of equilibrium in a competitive market

In Figure 5.2(a) all the mutual gains from trade have been exhausted by economic agents and there are ‘no dollar bills left on the sidewalk’. It is important to note that the position of supply and demand curves, and hence

market-clearing prices and equilibrium output, will be influenced by the expectations of economic agents. Since even rationally formed expectations can turn out to be wrong due to incomplete information, this means that, at least until agents acquire more accurate information, a currently observed market-clearing equilibrium will differ from a full information equilibrium. Nevertheless, since agents are doing the best they can with the information they have acquired, they are seen to be in a state of equilibrium at all times, as illustrated below.

RATIONALITY \Rightarrow OPTIMIZATION \Rightarrow EQUILIBRIUM

The assumption of continuous market clearing is the most critical and controversial assumption underlying new classical analysis and is highly contentious, as it implies that prices are free to adjust instantaneously to clear markets.

The aggregate supply hypothesis

As with the rational expectations hypothesis, various explanations of the aggregate supply hypothesis can be found in the literature. Having said this, two main approaches to aggregate supply can be identified. Underlying these approaches are two orthodox microeconomic assumptions: (i) rational decisions taken

by workers and firms reflect optimizing behaviour on their part; and (ii) the supply of labour/output by workers/firms depends upon relative prices.

The first new classical approach to aggregate supply focuses on the supply of labour and derives from the work of Lucas and Rapping (1969). During any period, workers have to decide how much time to allocate between work and leisure. Workers, it is assumed, have some notion of the normal or expected average real wage. If the current real wage is above the normal real wage, workers will have an incentive to work more (take less leisure time) in the current period in the anticipation of taking more leisure (working less) in the future, when the real wage is expected to be lower. Conversely, if the current real wage is below the norm, workers will have an incentive to take more leisure (work less) in the current period in the anticipation of working more (taking less leisure) in the future, when the real wage is expected to be higher. The supply of labour is postulated, therefore, to respond to perceived temporary changes in the real wage. This behavioural response of substituting current leisure for future leisure and vice versa is referred to as 'intertemporal substitution'. Within the intertemporal substitution model, changes in employment are explained

in terms of the ‘voluntary’ choices of workers who change their supply of labour in response to perceived temporary changes in the real wage.

The second new classical approach to aggregate supply again derives from the highly influential work of Lucas (1972a, 1973). An important element of Lucas’s analysis concerns the structure of the information set available to producers. It is assumed that, while a firm knows the current price of its own goods, the general price level for other markets only becomes known with a time lag. When a firm experiences a rise in the current market price of its output it has to decide whether the change in price reflects (i) a real shift in demand towards its product, in which case the firm should respond (rationally) to the increase in the price of its output relative to the price of other goods by increasing its output, or (ii) merely a nominal increase in demand across all markets, producing a general increase in prices which would not require a supply response. Firms are faced by what is referred to as a ‘signal extraction’ problem, in that they have to distinguish between relative and absolute price changes. Indeed, the greater the variability of the general price level, the more difficult it will be for a producer to extract a correct signal and the smaller the supply response is

likely to be to any given change in prices. The analysis of the behaviour of individual agents in terms of the supply of both labour and goods has led to what is referred to as the Lucas ‘surprise’ supply function, the simplest form of which is given by equation (5.3):

$$Y_t = Y_{N_t} + \alpha[P_t - P_t^e], \quad \alpha > 0 \quad (5.3)$$

Since in new classical models expectations are formed rationally, we can replace (5.3) with (5.4):

$$Y_t = Y_{N_t} + \alpha[P_t - E(P_t | \Omega_{t-1})] \quad (5.4)$$

Equation (5.4) states that output (Y_t) deviates from its natural level (Y_{N_t}) only in response to deviations of the actual price level (P_t) from its (rational) expected value [$E(P_t | \Omega_{t-1})$], that is, in response to an unexpected (surprise) increase in the price level. For example, when the actual price level turns out to be greater than expected, individual agents are ‘surprised’ and mistake the increase for an increase in the relative price of their own output, resulting in an increase in the supply of output and employment in the economy. In the absence of price surprises, output will be at its natural level. For any given expectation of the price level, the aggregate supply curve will slope upwards in P - Y space, and the greater the value of α , the more elastic will be the ‘surprise’ aggregate

supply curve and the bigger will be the impact on real variables of an unanticipated rise in the general price level.

An alternative specification of the Lucas surprise function states that output only deviates from its natural level in response to a deviation of actual from expected inflation (that is, in response to errors in inflation expectations):

$$Y_t = Y_{N_t} + \alpha[\dot{P}_t - E(\dot{P}_t | \Omega_{t-1})] + \varepsilon_t \quad (5.5)$$

In equation (5.5) \dot{P}_t is the actual rate of inflation, $E(\dot{P}_t | \Omega_{t-1})$ is the rational expectation of rate of inflation subject to the information available up to the previous period, and ε_t is a random error process. According to Lucas, countries where inflation has been relatively stable should show greater supply response to an inflationary impulse and vice versa. In his famous empirical paper, Lucas (1973) confirmed that: In a stable price country like the United States ... policies which increase nominal income tend to have a large initial effect on real output, together with a small positive effect on the rate of inflation ... In contrast, in a volatile price county like Argentina, nominal income changes are associated with equal, contemporaneous price movements with no discernible effect on real output.

INTERTEMPORAL SUBSTITUTION MODEL

The Inter temporal nature of condition choice at the micro level of the household will be treated more formally, using analysis that originated in the work of Irving Fisher. It is the process by which people make decisions about what and how much to do at various points in time, when choices at one time influence the possibilities available at other points in time. Most choices require decision makes to trade off costs and benefits at different points in time

INTERTEMPORAL CHOICE

Irving Fisher developed the theory of inter temporal model in his book “**Theory of Interest**” in the year 1930.

What is inter temporal choice?

Inter temporal choice is an economic term describing how an individual’s current decisions affect what options become available in the future .

Theoretically, by not consuming today, consumption levels could increase significantly in the future and vice versa.

According to Keynes Absolute income hypothesis current consumption depends only on current income. But

this analysis is not always true. In reality while taking consumption and saving decisions people consider both the present and the future.

The more people consume in the current period and less they save, then they will be able to consume less in the next period. There is always a trade off between current consumption and future consumption.

The present consumption is based on the value of future income from both human and non human source. Wealth is considered as the important income generating source for both human and non human.

Fishers model of Intertemporal choice illustrates at least three things.

- (1) Budget constraint faced by the consumer
- (2) Their preferences between current and future consumption.
- (3) Households decision regarding optimal consumption and saving over an extended period of time.

We know that, consumption is the ultimate purpose of all economic activity, household utility is taken to be a function of the time profile of its consumption.

We can derive the total utility,

$$U = f (c_0, c_1, c_2, \dots, c_N)$$

The household is assumed to choose that time profile of consumption which maximise it's utility , subject to the constraint imposed by the households wealth.

Then the total wealth is derived as,

$$W = y_1/1+i + y_2 / (1+i)^2 + \dots + y_N / (1+i)^N$$

Y_t = Disposable income in period t .

W = wealth

I = Market rate of interest

ASSUMPTIONS

- future income in each of the future years and the future market rate of interest are assumed to be known with a 100% probability.
- The household can borrow or lend at the going market rate of interest as much as it wants.
- Transaction costs involved in borrowing and lending activities are taken to be zero.

Given the above assumption we can consider the problem of inter temporal choice over two period, present and next period (future period).

Then the utility function as,

$$U = f (c_0 , c_1)$$

The wealth constraint is,

$$W = y_0 + y_1 / (1+i)$$

The wealth constraint is in the income or consumption base so,

$$y_0 + y_1 = c_0 + c_1$$

ie., $c_0 + c_1 / (1+i) = W$

$$c_0 + c_1 = (1+i) W$$

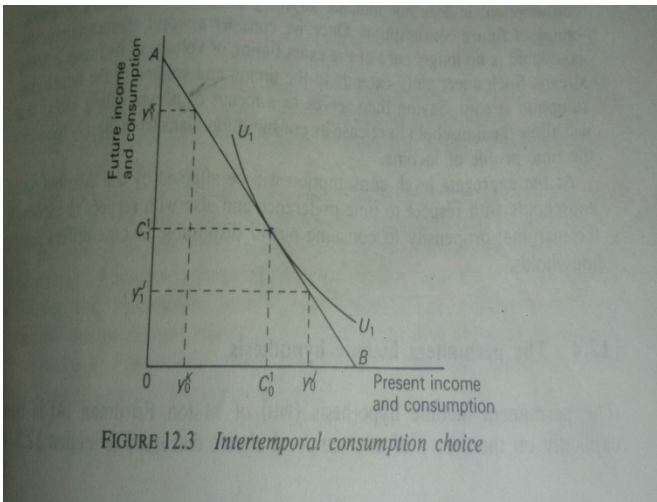
$$c_1 = 1+i [W - c_0]$$

$$c_1 = W (1+i) - c_0 (1+i)$$

Which is the equation of the budget line AB in the figure 12.3 . This is the constraint subject to which utility is maximised. The slope of AB is $-(1+i)$.

The graphical representation of inter temporal model is below,

Figure: 12.3



There are many combinations of present and future that will give the wealth constraint imposed by budget line AB . The ' x ' axis represent the present income and consumption and the ' y ' axis represent the future income and consumption.

Two of the combinations, y^j_0 , y^j_1 and y^k_0 , are shown in figure 12.3. in the case of income stream y^j_0 , y^j_1 , utility is maximised by consuming less than current income in the present, and thus by consuming more than the next periods income in the future. In the income stream y^k_0 , y^k_1 , utility is maximised by consuming less than the income which will accrue in the next period. This is financed by borrowing an amount equal to the distance $y^k_0 c^k_0$, on which the market rate of interest, i , must be paid.

CONCLUSION

From this analysis one can deduce that, given this type of household behaviour, current household consumption plans depend not only on current income but also on the future expected income stream, the market rate of interest at which this income stream is discounted and the time preference of the consumer. A further important deduction is that the decision to save is inherently linked with the consumption decision, since the decision to save

out of current income is a decision to postpone consumption, whereas dissaving involves consuming in the present at the expense of future consumption.

The Influence of Robert E. Lucas Jr

Professor Robert E. Lucas Jr is widely acknowledged as the originator and central figure in the development of the new classical approach to macroeconomics and has been described by Michael Parkin (1992) as ‘the leading macro mountaineer of our generation’. In recognition of Lucas’s seminal research in macroeconomics, in October 1995 the Royal Swedish Academy of Sciences announced its decision to award him the Nobel Memorial Prize in Economics ‘for having developed and applied the hypothesis of rational expectations, and thereby having transformed macroeconomic analysis and deepened our understanding of economic policy’. The award of this prestigious prize to Lucas came as no surprise to economists since, without doubt, his important contributions have made him the most influential macroeconomist during the last quarter of the twentieth century. While some commentators see Lucas’s contributions to business cycle analysis as ‘part of the natural progress of economics’ (Chari, 1998), or as

‘part of the steady accumulation of knowledge’ (Blanchard, 2000), others make frequent reference to ‘revolution’ or counter-revolution when discussing the influence of Lucas’s contributions to macroeconomics (Tobin, 1996; Snowdon and Vane, 1999b; Woodford, 2000).

Although Lucas made explicit use of the rational expectations hypothesis in analysing optimal investment policy as early as 1965, it was not until he began to wrestle with aggregate supply issues, within a Walrasian general equilibrium framework, that the real significance of this hypothesis for macroeconomics became clear (Fischer, 1996a). While the Lucas and Rapping (1969) paper is perhaps the first ‘new classical’ paper in spirit, because of its emphasis on the equilibrium (voluntary) nature of unemployment and its utilization of the intertemporal labour substitution hypothesis (see Hoover, 1988 and Chapter 6), it was the series of papers written by Lucas and published in the period 1972–8 that established the analytical base of the rational expectations equilibrium approach to research into aggregate economic fluctuations (business cycles). Collectively these papers had an

immense influence on the direction of macroeconomic research during the last quarter of the twentieth century.

Equilibrium Business Cycle Theory

Before Keynes's (1936) *General Theory* many economists were actively engaged in business cycle research (see Haberler, 1963). However, one of the important consequences of the Keynesian revolution was the redirection of macroeconomic research towards questions relating to the level of output at a point in time, rather than the dynamic evolution of the economy over time. Nevertheless, within mainstream macroeconomics, before the 1970s, the main approach to the analysis of business cycles after 1945 was provided by Keynesians and monetarists (see Mullineux, 1984). During the 1970s a new approach to the study of aggregate fluctuations was initiated by Lucas, who advocated an equilibrium approach to business cycle modelling (Kim, 1988). Lucas's equilibrium theory was a significant departure from Keynesian business cycle analysis where fluctuations of GDP were viewed as disequilibrium phenomena. Keynesian macroeconomic models are typically characterized by various rigidities and frictions that inhibit wage and price flexibility. Consequently, in the short run,

markets fail to clear and GDP can depart significantly from its potential level for extended periods of time. Milton Friedman also criticized Keynesian models for their downplaying of the importance of monetary disturbances as a major source of aggregate instability. The Friedman and Schwartz (1963) study proved to be highly influential to a whole generation of economists. In particular Friedman and Schwartz argued that the Great Depression was ‘a tragic testimonial to the importance of monetary factors’. While Lucas was very much influenced by Friedman’s monetarist ideas, he preferred to utilize a Walrasian research methodology rather than build on Friedman’s Marshallian approach when analysing business cycles (see Hoover, 1984).

The foundations of Lucas’s approach to business cycle modelling can be found in his seminal *Journal of Economic Theory* paper (Lucas, 1972a), where his objective is clearly stated in the opening paragraphs:

This paper provides a simple example of an economy in which equilibrium prices and quantities exhibit what may be the central feature of the modern business cycle: a systematic relation between the rate of change of nominal prices (inflation) and the level of real output. The relationship, essentially a variant of the wellknown Phillips curve, is derived within a framework from which all forms of ‘money illusion’ are rigorously excluded: all prices are market

clearing, all agents behave optimally in light of their objectives and expectations, and expectations are formed optimally ... In the framework presented, price movement results from a relative demand shift or a nominal (monetary) one. This hedging behaviour results in the non neutrality of money, or broadly speaking a Phillips curve, similar in nature to that we observe in reality. At the same time, classical results on the long-run neutrality of money, or independence of real and nominal magnitudes, continue to hold.

Lucas demonstrated that within this Walrasian framework, monetary changes have real consequences, but ‘only because agents cannot discriminate perfectly between monetary and real demand shifts’ so ‘there is no usable trade-off between inflation and real output’. In Lucas’s 1972 model ‘the Phillips curve emerges not as an unexplained empirical fact, but as a central feature of the solution to a general equilibrium system’. Building on this insight, Lucas proceeded to develop an equilibrium approach to the analysis of aggregate fluctuations. Lucas (1975) defines business cycles as the serially correlated movements about trend of real output that ‘are not explainable by movements in the availability of factors of production’. Associated with fluctuations in GDP are co-movements among different aggregative time series, such as prices, consumption, business profits, investment, monetary aggregates, productivity and interest rates (see

Abel and Bernanke, 2001). Such are the regularities that Lucas (1977) declares that ‘with respect to the qualitative behaviour of co-movements among series, *business cycles are all alike*’ (the Great Depression being an exception). To Lucas the ‘recurrent character of business cycles is of central importance’. As Lucas (1977) explains:

Insofar as business cycles can be viewed as repeated instances of essentially similar events, it will be reasonable to treat agents as reacting to cyclical changes as ‘risk’, or to assume their expectations are rational, that they have fairly stable arrangements for collecting and processing information, and that they utilise this information in forecasting the future in a stable way, free of systematic and easily correctable biases.

Building on his path-breaking 1972 and 1973 papers, Lucas (1975, 1977) provides a ‘new classical’ monetarist explanation of the business cycle as an equilibrium phenomenon. As Kevin Hoover (1988) observes, ‘to explain the related movements of macroeconomic aggregates and prices without recourse to the notion of disequilibrium is the desideratum of new classical research on the theory of business cycles’. As Lucas (1975) puts it, ‘the central problem in macroeconomics’ is to find a theoretical framework where monetary disturbances can cause real output fluctuations which at the same time does not imply ‘the existence of

persistent, recurrent, unexploited profit opportunities' such as occur in Keynesian models characterised by price rigidities and non-rational expectations. Hayek (1933) had set forth a research agenda where 'the crucial problem of Trade Cycle Theory' was to produce a solution that would allow 'incorporation of cyclical phenomena into the system of economic equilibrium theory, with which they are in apparent contradiction'. By equilibrium theory Hayek meant that which had been 'most perfectly expressed by the Lausanne School of theoretical economics'. While Keynesian economists regarded the quest for an equilibrium theory of the business cycle as unattainable, it is one of Lucas's most notable achievements to demonstrate that it is possible to develop an equilibrium account of aggregate instability. Although initially Lucas claimed some affinity, via the notion of equilibrium theorizing, with the work of Hayek on business cycles, it is now clear that new classical and Austrian theories of the business cycle are very different. While the Austrian theory views business cycles as an equilibrating *process*, in new classical models the business cycle is viewed as a 'continuum of equilibrium' (Kim, 1988; see also Chapter 9; Lucas, 1977; Hoover, 1984, 1988; Zijp, 1993).

Lucas's monetary equilibrium business cycle theory (MEBCT) incorporates Muth's (1961) rational expectations hypothesis, Friedman's (1968a) natural rate hypothesis, and Walrasian general equilibrium methodology. With continuous market clearing due to complete wage and price flexibility the fluctuations in the MEBCT are described as competitive equilibria. But how can monetary disturbances create fluctuations in such a world? In the stylized classical model where agents have perfect information, changes in the money supply should be strictly neutral, that is, have no impact on real variables such as real GDP and employment. However, the leading and procyclical behaviour of money observed empirically by researchers such as Friedman and Schwartz (1963), and more recently by Romer and Romer (1989), suggests that money is non-neutral (ignoring the possibility of reverse causation). The intellectual challenge facing Lucas was to account for the non-neutrality of money in a world inhabited by rational profit-maximizing agents and where all markets continuously clear. His main innovation was to extend the classical model so as to allow agents to have 'imperfect information'. As a result Lucas's MEBCT has come to be popularly known as the 'misperceptions

theory', although the idea of instability being the result of monetary-induced misperceptions is also a major feature of Friedman's (1968a) analysis of the Phillips curve. In Lucas's (1975) pioneering attempt to build a MEBCT his model is characterized by: prices and quantities determined in competitive equilibrium; agents with rational expectations; and imperfect information, 'not only in the sense that the future is unknown, but also in the sense that no agent is perfectly informed as to the current state of the economy'.

The hypothesis that aggregate supply depends upon relative prices is central to the new classical explanation of fluctuations in output and employment. In new classical analysis, unanticipated aggregate demand shocks (resulting mainly from unanticipated changes in the money supply) which affect the whole economy cause errors in (rationally formed) price expectations and result in output and employment deviating from their long-run (full information) equilibrium (natural) levels. These errors are made by both workers and firms who have incomplete/imperfect information, so that they mistake general price changes for relative price changes and react by changing the supply of labour and output, respectively.

THE REAL BUSINESS CYCLE SCHOOL

In the model developed during the early 1980s by Kydland and Prescott (1982) a purely supply-side explanation of the business cycle is provided. This paper marked the launch of a ‘mark II’ version of new classical macroeconomics. Indeed, the research of Kydland and Prescott represented a serious challenge to *all* previous mainstream accounts of the business cycle that focused on aggregate demand shocks, in particular those that emphasized monetary shocks.

Particularly shocking to conventional wisdom is the bold conjecture advanced by real business cycle theorists that each stage of the business cycle (peak, recession, trough and recovery) is an equilibrium! As Hartley et al. (1998) point out, ‘to common sense, economic booms are good and slumps are bad’. This ‘common sense’ vision was captured in the neoclassical synthesis period with the assumption that ‘full employment’ represented equilibrium and that recessions were periods of welfare-reducing disequilibrium implying market failure and the need for stabilization policy. Real business cycle theorists reject this market failure view. While recessions are not desired by economic agents, they represent the aggregate

outcome of responses to unavoidable shifts in the constraints that agents face. Given these constraints, agents react optimally and market outcomes displaying aggregate fluctuations are efficient. There is no need for economists to resort to disequilibrium analysis, coordination failure, price stickiness, monetary and financial shocks, and notions such as fundamental uncertainty to explain aggregate instability. Rather, theorists can make use of the basic neoclassical growth model to understand the business cycle once allowance is made for randomness in the rate of technological progress. In this setting, the business cycle emerges as the aggregate outcome of maximizing decisions made by all the agents populating an economy.

Real Business Cycle Theory

The modern new classical research programme starts from the position that ‘growth and fluctuations are not distinct phenomena to be studied with separate data and different analytical tools’ (Cooley, 1995). The REBCT research programme was initiated by Kydland and Prescott (1982), who in effect took up the challenge posed by Lucas (1980a) to build an artificial imitation economy capable of imitating the main features of actual economies. The artificial economy consists of optimizing

agents acting in a frictionless perfectly competitive environment that is subject to repeated shocks to productivity. Although the second phase of new classical macroeconomics has switched emphasis away from monetary explanations of the business cycle, the more recently developed equilibrium models have retained and refined the other new classical building blocks.

Following Frisch (1933) and Lucas (1975, 1977), real business cycle theorists distinguish between *impulse* and *propagation* mechanisms. An impulse mechanism is the initial shock which causes a variable to deviate from its steady state value. A propagation mechanism consists of those forces which carry the effects of the shock forward through time and cause the deviation from the steady state to persist. The more recent brand of new classical equilibrium theories has the following general features (Stadler, 1994):

1. REBCT utilizes a representative agent framework where the agent/household/firm aims to maximize their utility or profits, subject to prevailing resource constraints.
2. Agents form expectations rationally and do not suffer informational asymmetries. While expected prices are equal to actual prices, agents may still face a signal

extraction problem in deciding whether or not a particular productivity shock is temporary or permanent.

3. Price flexibility ensures continuous market clearing so that equilibrium always prevails. There are no frictions or transaction costs.

4. Fluctuations in aggregate output and employment are driven by large random changes in the available production technology. Exogenous shocks to technology act as the impulse mechanism in these models.

5. A variety of propagation mechanisms carry forward the impact of the initial impulse. These include the effect of consumption smoothing, lags in the investment process ('time to build'), and intertemporal labour substitution.

6. Fluctuations in employment reflect voluntary changes in the number of hours people choose to work. Work and leisure are assumed to be highly substitutable over time.

7. Monetary policy is irrelevant, having no influence on real variables, that is, money is neutral.

8. The distinction between the short run and the long run in the analysis of economic fluctuations and trends is abandoned.

It can be seen from the above that the major changes from MEBCT are with respect to: (i) the dominant impulse factor, with technological shocks replacing monetary

shocks; (ii) the abandonment of the emphasis given to imperfect information as regards the general price level which played such a crucial role in the earlier monetary misperception models inspired by Lucas; and (iii) the breaking down of the short-run/long-run dichotomy in macroeconomic analysis by integrating the theory of growth with the theory of fluctuations. The lack of clear supporting evidence from econometric work on the causal role of money in economic fluctuations was generally interpreted as providing a strong case for shifting the direction of research towards models where real forces play a crucial role. As we have already seen, this case was further strengthened by the findings of Nelson and Plosser (1982) that most macroeconomic time series are better described as a random walk, rather than as fluctuations or deviations from deterministic trends.

The Policy Implications of Real Business Cycle Theory

Before 1980, although there was considerable intellectual warfare between macroeconomic theorists, there was an underlying consensus relating to three important issues. First, economists viewed fluctuations in aggregate output as temporary deviations from some underlying trend rate of growth. An important determinant of this trend was seen to be an exogenously determined

smooth rate of technological progress. Second, aggregate instability in the form of business cycles was assumed to be socially undesirable since they reduced economic welfare. Instability could and therefore should be reduced by appropriate policies. Third, monetary forces are an important factor when it comes to explaining the business cycle. Orthodox Keynesian, monetarist and new classical economists accepted all three of these pillars of conventional wisdom. Of course these same economists did not agree about how aggregate instability should be reduced. Neither was there agreement about the transmission mechanism which linked money to real output. In Keynesian and monetarist models, non-neutralities were explained by adaptive expectations and the slow adjustment of wages and prices to nominal demand shocks.

In the new classical market-clearing models of the 1970s, non-neutralities were explained as a consequence of agents having imperfect information. When it came to policy discussions about how to stabilize the economy, monetarists and new classical economists favoured a fixed (k per cent) monetary growth rate rule, whereas Keynesian economists argued in favour of discretion (see Modigliani, 1986; Tobin, 1996). The main impact of the first wave of

new classical theory on policy analysis was to provide a more robust theoretical case against activism (see Kydland and Prescott, 1977). The political business cycle literature also questioned whether politicians could be trusted to use stabilization policy in order to reduce fluctuations, rather than as a means for maximizing their own interests.

During the 1980s everything changed. The work of Nelson and Plosser (1982) and Kydland and Prescott (1982) caused economists to start asking the question ‘Is there a business cycle?’ Real business cycle theorists find the use of the term ‘business cycle’ unfortunate (Prescott, 1986) because it suggests there is a phenomenon to explain that is independent of the forces determining economic growth. Real business cycle theorists, by providing an integrated approach to growth and fluctuations, have shown that large fluctuations in output and employment over relatively short time periods are ‘what standard neoclassical theory predicts’. Indeed, it ‘would be a puzzle if the economy did not display large fluctuations in output and employment’ (Prescott, 1986). Since instability is the outcome of rational economic agents responding optimally to changes in the economic environment, observed fluctuations should *not* be viewed as welfare-reducing deviations from some ideal trend path

of output. In a competitive theory of fluctuations the equilibria are Pareto-optimal (see Long and Plosser, 1983; Plosser, 1989). The idea that the government should in any way attempt to reduce these fluctuations is therefore anathema to real business cycle theorists. Such policies are almost certain to reduce welfare. As Prescott (1986) has argued, ‘the policy implication of this research is that costly efforts at stabilisation are likely to be counter-productive. Economic fluctuations are optimal responses to uncertainty in the rate of technological progress.’ Business cycles trace out a path of GDP that reflects random fluctuations in technology. This turns conventional thinking about economic fluctuations completely on its head. If fluctuations are Pareto-efficient responses to shocks to the production function largely resulting from technological change, then monetary factors are no longer relevant in order to explain such instability; nor can monetary policy have any real effects. Money is neutral. Since workers can decide how much they want to work, observed unemployment is always voluntary. Indeed, the observed fluctuating path of GNP is nothing more than a continuously moving equilibrium. In real business cycle theory there can be no meaning to a stated government objective such as ‘full employment’

because the economy is already there! Of course the real business cycle view is that the government can do a great deal of harm if it creates various distortions through its taxing and spending policies. However, as we have already noted, in real business cycle models a temporary increase in government purchases will increase output and employment because the labour supply increases in response to the higher real interest rate brought about by higher (real) aggregate demand.

If technological change is the key factor in determining both growth and fluctuations, we certainly need to develop a better understanding of the factors which determine the rate of technological progress, including institutional structures and arrangements (see Chapter 11). To real business cycle theorists the emphasis given by Keynesian and monetarist economists to the issue of stabilization has been a costly mistake. In a dynamic world instability is as desirable as it is inevitable.

Finally, Chatterjee (1999) has pointed out that the emergence of REBCT is a legacy of successful countercyclical policies in the post-Second World War period. These policies, by successfully reducing the volatility of GDP due to aggregate demand disturbances compared to earlier periods, has allowed the impact of

technological disturbances to emerge as a dominant source of modern business cycles.

SUPPLY-SIDE ECONOMICS

The term “supply-side economics” is used in two different but related ways. Some use the term to refer to the fact that production (supply) underlies consumption and living standards. In the long run, our income levels reflect our ability to produce goods and services that people value. Higher income levels and living standards cannot be achieved without expansion in output. Virtually all economists accept this proposition and therefore are “supply siders.”

“Supply-side economics” is also used to describe how changes in marginal tax rates influence economic activity. Supply-side economists believe that high marginal tax rates strongly discourage income, output, and the efficiency of resource use. In recent years, this latter use of the term has become the more common of the two and is thus the focus of this article.

The marginal tax rate is crucial because it affects the incentive to earn. The marginal tax rate reveals how much of one’s *additional* income must be turned over to the tax collector as well as how much is retained by the

individual. For example, when the marginal rate is 40 percent, forty of every one hundred dollars of additional earnings must be paid in taxes, and the individual is permitted to keep only sixty dollars of his or her additional income. As marginal tax rates increase, people get to keep less of what they earn.

An increase in marginal tax rates adversely affects the output of an economy in two ways. First, the higher marginal rates reduce the payoff people derive from work and from other taxable productive activities. When people are prohibited from reaping much of what they sow, they will sow more sparingly. Thus, when marginal tax rates rise, some people—those with working spouses, for example—will opt out of the labor force. Others will decide to take more vacation time, retire earlier, or forgo overtime opportunities. Still others will decide to forgo promising but risky business opportunities. In some cases, high tax rates will even drive highly productive citizens to other countries where taxes are lower. These adjustments and others like them will shrink the effective supply of resources, and therefore will shrink output.

Second, high marginal tax rates encourage tax-shelter investments and other forms of tax avoidance. This is inefficient. If, for example, a one-dollar item is tax

deductible and the individual has a marginal tax of 40 percent, he will buy the item if it is worth more than sixty cents to him because the true cost to him is only sixty cents. Yet the one-dollar price reflects the value of resources given up to produce the item. High marginal tax rates, therefore, cause an item with a cost of one dollar to be used by someone who values it less than one dollar. Taxpayers facing high marginal tax rates will spend on pleasurable, tax-deductible items such as plush offices, professional conferences held in favorite vacation spots, and various fringe benefits (e.g., a company luxury automobile, business entertainment, and a company retirement plan). Real output is less than its potential because resources are wasted producing goods that are valued less than their cost of production.

Critics of supply-side economics point out that most estimates of the elasticity of labor supply indicate that a 10 percent change in after-tax wages increases the quantity of labor supplied by only 1 or 2 percent. This suggests that changes in tax rates would exert only a small effect on labor inputs. However, these estimates are of short-run adjustments. One way to check the long-run elasticity of labor supply is to compare countries, such as France, that have had high marginal tax rates on even

middle-income people for a long time with countries, such as the United States, where the marginal rates have been persistently lower. Recent work by Edward Prescott, corecipient of the 2004 Nobel Prize in economics, used differences in marginal tax rates between France and the United States to make such a comparison. Prescott found that the elasticity of the long-run labour supply was substantially greater than in the short-run supply and that difference in tax rates between France and the United States explained nearly the entire 30 percent shortfall of labour inputs in France compared with the United States. He concluded:

I find it remarkable that virtually all of the large difference in labour supply between France and the United States is due to differences in tax systems. I expected institutional constraints on the operation of labour markets and the nature of the unemployment benefit system to be more important. I was surprised that the welfare gain from reducing the intratemporal tax wedge is so large. (Prescott 2002, p. 9)

The supply-side economic policy of cutting high marginal tax rates, therefore, should be viewed as a long-run strategy to enhance growth rather than a short-run tool to end recession. Changing market incentives to increase

the amount of labor supplied or to move resources out of tax-motivated investments and into higher-yield activities takes time. The full positive effects of lower marginal tax rates are not observed until labor and capital markets have time to adjust fully to the new incentive structure.

Because marginal tax rates affect real output, they also affect government revenue. An increase in marginal tax rates shrinks the tax base, both by discouraging work effort and by encouraging tax avoidance and even tax evasion. This shrinkage necessarily means that an increase in tax rates leads to a less than proportional increase in tax revenues. Indeed, economist Arthur Laffer (of “Laffer curve” fame) popularized the notion that higher tax rates may actually cause the tax base to shrink so much that tax revenues will decline, and that a cut in tax rates may increase the tax base so much that tax revenues increase.

How likely is this inverse relationship between tax rates and tax revenues? It is more likely in the long run when people have had a long time to adjust. It is also more likely when marginal tax rates are high, but less likely when rates are low. Imagine a taxpayer in a 75 percent tax bracket who earns \$300,000 a year. Assume for simplicity that the 75 percent tax rate applies to all his income. Then the government collects \$225,000 in tax revenue from this

person. Now the government cuts tax rates by one-third, from 75 percent to 50 percent. After the tax cut, this taxpayer gets to keep \$50, rather than \$25, of every \$100, a 100 percent increase in the incentive to earn. If this doubling of the incentive to earn causes him to earn 50 percent more, or \$450,000, then the government will get the same revenue as before. If it causes him to earn more than \$450,000, the government gets more revenue.

Now consider a taxpayer paying a tax rate of 15 percent on all his income. The same 33 percent rate reduction cuts his rate from 15 percent to 10 percent. Here, take-home pay per \$100 of additional earnings will rise from \$85 to \$90, only a 5.9 percent increase in the incentive to earn. Because cutting the 15 percent rate to 10 percent exerts only a small effect on the incentive to earn, the rate reduction has little impact on the amount earned. Therefore, in contrast with the revenue effects in high tax brackets, tax revenue will decline by almost the same percentage as tax rates in the lowest tax brackets. The bottom line is that cutting all rates by a third will lead to small revenue losses (or even revenue gains) in high tax brackets and large revenue losses in the lowest brackets. As a result, the share of the income tax paid by high-income taxpayers will rise.

As the Keynesian perspective triumphed following World War II, most economists believed tax reductions affect output through their impact on total demand. The potential supply-side effects of taxes were ignored. However, in the 1970s, as inflation pushed more and more Americans into high tax brackets, a handful of economists challenged the dominant Keynesian view. Led by Paul Craig Roberts, Norman Ture, and Arthur Laffer, they argued that high taxes were a major drag on the economy and that the top rates could be reduced without a significant loss in revenue. They became known as supply-side economists. During the presidential campaign of 1980, Ronald Reagan argued that high marginal tax rates were hurting economic output, but contrary to what many people think, neither Reagan nor his economic advisers believed that cuts in marginal tax rates would increase tax revenue.

The 1975–1985 period were an era of great debate about the impact of supply-side policies. The supply siders highlighted the positive evidence from two earlier major tax cuts—the Coolidge-Mellon cuts of the 1920s and the Kennedy tax cut of the 1960s. Between 1921 and 1926, three major tax cuts reduced the top marginal rate from 73 percent to 25 percent. The Kennedy tax cut reduced rates across the board, and the top marginal rate was sliced from

91 percent to 70 percent. Both of these tax cuts were followed by strong growth and increasing prosperity. In contrast, the huge Hoover tax increase of 1932—the top rate was increased from 25 percent to 63 percent in one year—helped keep the economy depressed. As the economy grew slowly in the 1970s and the unemployment rate rose, supply-side economists argued that these conditions were the result of high tax rates due to high inflation.

Keynesian economists were not impressed with the supply-side argument. They continued to focus on the demand-side effects, charging that it was irresponsible to cut taxes at a time when inflation was already high. They expected the rate cuts to lead to larger budget deficits, which they did, but also that these deficits would increase demand and push the inflation rate to still higher levels. As Walter Heller, chairman of the Council of Economic Advisers under President John F. Kennedy put it, “The [Reagan] tax cut would simply overwhelm our existing productive capacity with a tidal wave of demand.” But this did not happen. Contrary to the Keynesian view, the inflation rate declined substantially from 9 percent during the five years prior to the tax cut to 3.3 percent during the five years after the cut.

Economists continue to debate the precise effects of the 1980s tax cuts. After extensive analysis of the 1986 rate reductions, both Lawrence Lindsey and Martin Feldstein concluded that for taxpayers previously facing marginal tax rates of 40 percent or more, the drop in tax rates caused such a large increase in taxable income that the government was collecting even more revenue from taxpayers in these top brackets. This would mean that tax rates of 40 percent had had a highly destructive impact on economic activity. Joel Slemrod argued that Lindsey's and Feldstein's estimates of the extra income due to tax rate cuts are too high because they inadequately reflect people's shifting of personal income from high-tax-rate years to low-tax-rate years and of business income from regular corporations to partnerships and Sub-S corporations in response to the lower personal tax rates. According to Slemrod, only a small portion of the increase in the tax base resulted from improvements in efficiency and expansion in the supply of labor and other resources.

Even though economists still disagree about the size and nature of taxpayer response to rate changes, most economists now believe that changes in marginal tax rates exert supply-side effects on the economy. It is also widely believed that high marginal tax rates—say, rates of 40

percent or more—are a drag on an economy. The heated debates are now primarily about the distributional effects. Supply-side critics argue that the tax policy of the 1980s was a bonanza for the rich. It is certainly true that taxable income in the upper tax brackets increased sharply during the 1980s. But the taxes collected in these brackets also rose sharply. Measured in 1982–1984 dollars, the income tax revenue collected from the top 10 percent of earners rose from \$150.6 billion in 1981 to \$199.8 billion in 1988, an increase of 32.7 percent. The percentage increases in the real tax revenue collected from the top 1 and top 5 percent of taxpayers were even larger. In contrast, the real tax liability of other taxpayers (the bottom 90 percent) declined from \$161.8 billion to \$149.1 billion, a reduction of 7.8 percent.

Since 1986, the top marginal personal income tax rate has been less than 40 percent, compared with 70 percent prior to 1981. Nonetheless, those with high incomes are now paying more. For example, more than 25 percent of the personal income tax has been collected from the top 0.5 percent of earners in recent years, up from less than 15 percent in the late 1970s. These findings confirm what the supply siders predicted: the lower rates, by increasing the tax base substantially in the upper tax

brackets, would increase the share of taxes collected from these taxpayers.

Supply-side economics has exerted a major impact on tax policy throughout the world. During the last two decades of the twentieth century, there was a dramatic move away from high marginal tax rates. In 1980, the top marginal rate on personal income was 60 percent or more in forty-nine countries. By 1990, only twenty countries had such a high top tax rate, and by 2000, only three countries—Cameroon, Belgium, and the Democratic Republic of Congo—had a top rate of 60 percent or more. In 1980, only six countries levied a personal income tax with a top marginal rate of less than 40 percent. By 2000, fifty-six countries had a top marginal income tax rate of less than 40 percent.

The former socialist economies have been at the forefront of those moving toward supply-side tax policies. Following the collapse of communism, most of these countries had a combination of personal income and payroll taxes that generated high marginal tax rates. As a result, the incentive to work was weak and tax evasion was massive. Russia was a typical case. In 2000, Russia's top personal income tax rate was 30 percent and a 40.5 percent payroll tax was applied at all earnings levels. If

Russians with even modest earnings complied with the law, the tax collector took well over half of their incremental income. Beginning in January 2001, the newly elected Putin administration shifted to a 13 percent flat-rate income tax and also sharply reduced the payroll tax rate. The results were striking. Tax compliance increased and the inflation-adjusted revenues from the personal income tax rose more than 20 percent annually during the three years following the adoption of the flat-rate tax. Further, the real growth rate of the Russian economy averaged 7 percent during 2001–2003, up from less than 2 percent during the three years prior to the tax cut.

Ukraine soon followed Russia's lead and capped its top personal income tax rate at 13 percent. Beginning in 2004, the Slovak Republic imposed a flat-rate personal income tax of 19 percent. Latvia and Estonia also have flat-rate personal income taxes.

Supply-side economics provided the political and theoretical foundations for what became a remarkable change in the tax structure of the United States and other countries throughout the world. The view that changes in tax rates exert an impact on total output and that marginal rates in excess of 40 percent exert a destructive influence

on the incentive of people to work and use resources wisely is now widely accepted by both economists and policymakers. This change in thinking is the major legacy of supply-side economics.

The Supply Shocks (With Diagram)

Any change in the AD and the AS will lead to fluctuations in the economy as a whole. These changes are called shocks to the economy.

A supply shock is a disturbance to the economy whose first impact is a shift in the AS curve. Shock may be adverse or favourable. In a case of an adverse supply shock.

It will have 2 effect:

- (i) Increase in P
- (ii) Decrease in the output level

e.g. Oil Price Shock. It is a case of adverse supply shock there is a sudden and significant rise in prices. An increase in the oil price implies an increase in the cost of production. As a result, firms will be willing to supply output only at a higher price. The AS curve will shift upwards to the left.

Price/AS equation:
$$P = \frac{W}{a}(1 + Z)$$

If we incorporate supply shock into AS curve by including price of raw materials then price (AS) equation will be written as:

$$P = \frac{1+z}{a} \cdot W + \theta P_m$$

...(1) P_m – Price of raw materials

θ – number of units of material required per unit of output, including a mark-up

$$P_m = \frac{P_m}{P}$$

...(2) θP_m – per unit cost of material input

Substituting (2) in (1):

$$P = \frac{1+Z}{1-\theta P_m} \cdot \frac{W}{a}$$

...(3) $\frac{P_m}{P}$ – relative price of material
 $\frac{W}{a}$ – productivity of labour

Proof: (Just for understanding) $\frac{W}{a}$ – Per unit labour cost of production

$$P = \frac{1+z}{a} \cdot W + \theta P_m \quad \dots(i) \quad Z - \text{Mark up over labour cost}$$

$$\text{or } P - \theta P_m = \frac{1+Z}{a} \cdot W \quad \dots(ii)$$

$$\therefore P_m = \frac{P_m}{p}$$

$$\therefore P_m \cdot P = P_m \quad \dots(iii)$$

Substituting (iii) in (ii)

$$P - \theta P_m \cdot P = \frac{1+z}{a} \cdot W$$

$$\text{or } P(1 - \theta P_m) = 1 + z \cdot \frac{W}{a}$$

$$\text{or } P = \frac{1+Z}{1-\theta P_m} \cdot \frac{W}{a} \quad \text{Proved.}$$

Equation (3) shows that given the (a) wage (b) profit margin and (c) the labour productivity, an increase in the real price of materials will lead to an increase in the cost of production and thus in an increase in the price level.

Thus, AS curve will shift to the left.

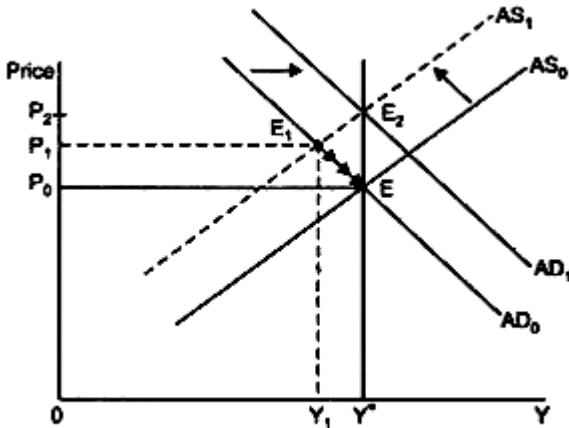


FIG. 13.5. ADVERSE SUPPLY SHOCK

Initially the economy is at full employment level (Y^*) at point E

Price level – P_0 .

Due to an adverse supply shock caused by an increase in the price of material (oil), at a given wage, AS curve shifts upwards to the left from AS_0 to AS_1 (Fig. 13.5).

Reason:

Increase in the cost of production.

Equilibrium of economy moves from point E to E_1 .

Immediate effect:

- (i) Increase in the price level from P_0 to P_1 ($P_1 > P_0$)
- (ii) Decrease in the output level from Y^* to Y_1 ($Y_1 < Y^*$)
- (iii) Real wages will fall.

As $Y_1 < Y^*$

Unemployment takes place because of decrease in the demand for labour.

Result: Wages will fall.

Increase in price level and fall in wages implies fall in:

Real wages (W/P):

Due to decrease in real wage (W/P), on the one hand labour cost falls and on the other hand fall in real wage (W/P) will lead to a decrease in the AD, and thus the price level will fall. The adjustment continues till the economy does not come back to the same price level and full employment level as it was before the shock.

The economy moves from point E_1 to E and the full employment output level (Y^*) is reached. This is called automatic adjustment process. Thus, an adverse supply shock gives dual blow to the economy, that is, higher price and low output level. There is thus inflation with recession known as stagflation. Increase in price is accompanied by higher unemployment. This leads to the break-down of Phillips curve.

How to accommodate a supply shock?

As the automatic adjustment process is slow because wages adjust downward slowly, therefore the economy will have to tolerate prolonged recession. Thus, expansionary monetary and fiscal policies are used which

will lead to an increase in AD and, thus can be used in case of adverse supply shock. Such policies which increase AD are called accommodating policies as it will prevent the price from falling. Price will rise by the full extent by which the AS curve shifts upwards.

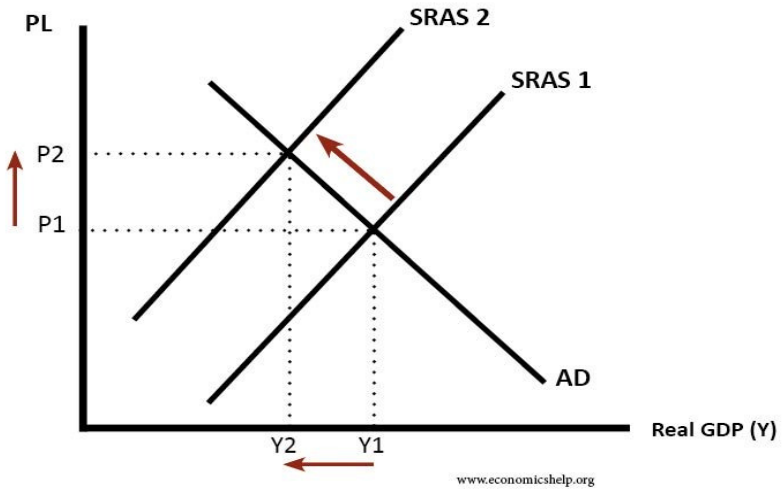
In Fig. (13.5) Due to expansionary monetary and fiscal policy AD curve will shift to the right from AD_0 to AD_1 . Equilibrium is attained at point E_2 , at a higher price level – P_2 but at the full employment output level – Y^* . However accommodating policies are not undertaken because of trade off between inflationary impact of supply shock and its recessionary effect.

Stagflation

Stagflation is a new terminology added to economics only after 1970's. The word stagflation is the combination of two words stag and flation. Stag means stagnation and flation means inflation. So stagflation is a contradictory situation in which an economy experience high unemployment along with high rate of inflation.

Stagflation is a period of rising inflation but falling output and rising unemployment. Stagflation is often caused by a rise in the price of commodities, such as oil. Stagflation occurred in the 1970s following the tripling in the price of oil. A degree of stagflation occurred in 2008,

following the rise in the price of oil and start of the global recession.



Higher oil prices increase costs of firms causing SRAS to shift to the left. AD/AS diagram showing stagflation (higher price level $P1$ to $P2$ and lower real GDP $Y1$ to $Y2$)

Causes of stagflation

- **Oil price rise** Stagflation is often caused by a supply-side shock. For example, rising commodity prices, such as oil prices, will cause a rise in business costs (transport more expensive) and short-run aggregate supply will shift to the left. This causes a higher inflation rate and lower GDP.
- **Powerful trade unions.** If trade unions have strong bargaining power – they may be able to

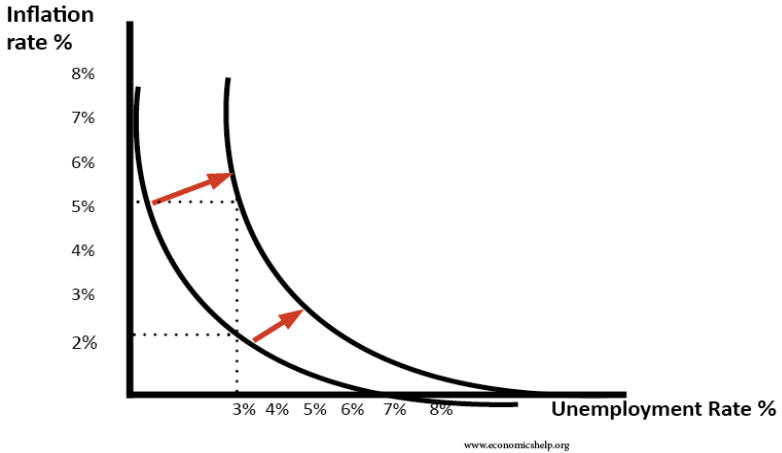
bargain for higher wages, even in periods of lower economic growth. Higher wages are a significant cause of inflation.

- **Falling productivity.** If an economy experiences falling productivity – workers becoming more inefficient; costs will rise and output fall.
- **Rise in structural unemployment.** If there is a decline in traditional industries, we may get more structural unemployment and lower output. Thus we can get higher unemployment – even if inflation is also increasing.

People may talk about stagflation if there is a rise in inflation and a fall in the growth rate. This is less damaging than higher inflation and negative growth. But, it still represents deterioration in the trade-off between unemployment and inflation.

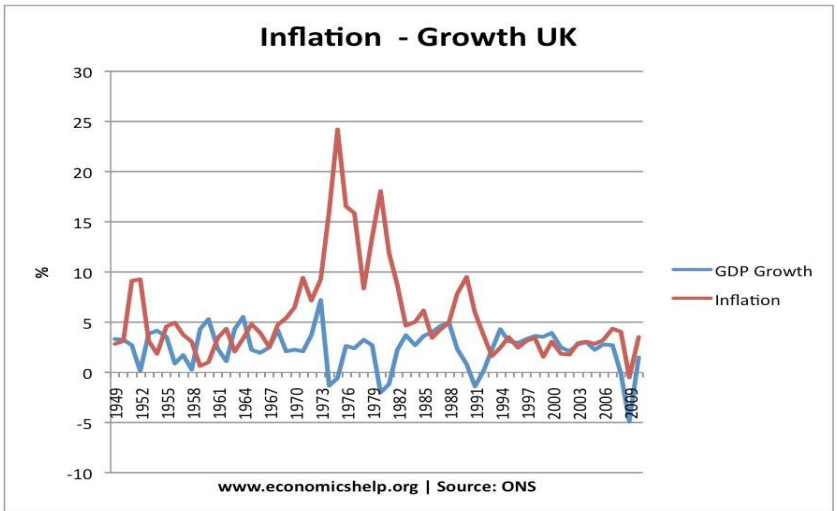
Stagflation and Phillips Curve

The traditional Phillips curve suggests there is a trade-off between inflation and unemployment. A period of stagflation will shift the Phillips curve to the right, giving a worse trade-off.



Phillips curve shifting to the right, indicating stagflation (higher inflation and higher unemployment.)

Stagflation in the 1970s



Solutions to stagflation

There are no easy solutions to stagflation.

- Monetary policy can generally try to reduce inflation (higher interest rates) or increase economic growth (cut interest rates). Monetary policy cannot solve both inflation and recession at the same time.
- One solution to make the economy less vulnerable to stagflation is to reduce the economies dependency on oil. Rising oil prices are the major cause of stagflation.
- The only real solution is supply-side policies to increase productivity; this enables higher growth without inflation.

Laffer curve

The Laffer Curve is a theory developed by supply-side economist Arthur Laffer to show the relationship between tax rates and the amount of tax revenue collected by governments. The curve is used to illustrate Laffer's argument that sometimes cutting tax rates can increase total tax revenue.

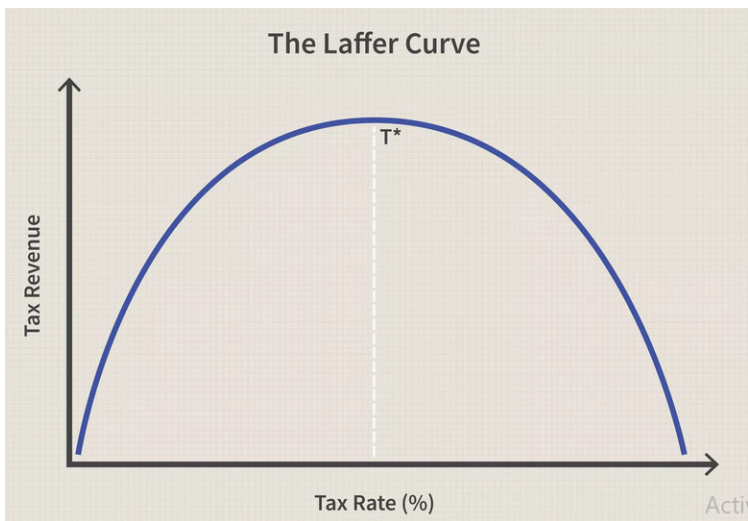
- The Laffer Curve describes the relationship between tax rates and total tax revenue, with an optimal tax rate that maximizes total government tax revenue.

- If taxes are too high along the Laffer curve, then they will discourage the taxed activities, such as work and investment, enough to actually reduce total tax revenue. In this case, cutting tax rates will both stimulate economic incentives and increase tax revenue.
- The Laffer curve was used as a basis for tax cuts in the 1980's with apparent success, but criticized on practical grounds on the basis of its simplistic assumptions, and on economic grounds that increasing government revenue might not always be optimal.

Understanding the Laffer curve

The Laffer curve is based on the economic idea that people will adjust their behaviour in the face of the incentives created by income tax rates. Higher income tax rates decrease the incentive to work and invest compared lower rates. If this effect is large enough, it means that at some tax rate, and further increase in the rate will actually lead to decrease in total tax revenue. For every type of tax, there is a threshold rate above which the incentive to produce more diminishes, thereby reducing the amount of revenue the government receives.

At a 0% tax rate, tax revenue would obviously be zero. As tax rates increase from low levels, tax revenue collected by the also government increases. Eventually, if tax rates reached 100 percent, shown as the far right on the Laffer Curve, all people would choose not to work because everything they earned would go to the government. Therefore it is necessarily true that at some point in the range where tax revenue is positive, it must reach a maximum point. This is represented by T^* on the graph below. To the left of T^* an increase in tax rate raises more revenue than is lost to offsetting worker and investor behaviour. Increasing rates beyond T^* however would cause people not to work as much or not at all, thereby reducing total tax revenue.



Therefore at any tax rate to the right of T^* , a reduction in tax rate will actually increase total revenue. The shape of the Laffer Curve, and thus the location of T^* is dependent on worker and investor preferences for work, leisure, and income, as well as technology and other economic factors. Governments would like to be at point T^* because it is the point at which the government collects maximum amount of tax revenue while people continue to work hard. If the current tax rate is to the right of T^* , then lowering the tax rate will both stimulate economic growth by increasing incentives to work and invest, and increase government revenue because more work and investment means a larger tax base.

MODULE IV

THE NEW KEYNESIAN SCHOOL

Introduction

New Keynesian economics is a school of contemporary macroeconomics that strives to provide microeconomic foundations for Keynesian economics. It developed partly as a response to criticisms of Keynesian macroeconomics by adherents of new classical macroeconomics.

New Keynesian Economics is a modern macroeconomic school of thought that evolved from classical Keynesian economics. This revised theory differs from classical Keynesian thinking in terms of how quickly prices and wages adjust.

New Keynesian advocates maintain that prices and wages are "sticky," meaning they adjust more slowly to short-term economic fluctuations. This, in turn, explains such economic factors as involuntary unemployment and the impact of federal monetary policies.

This way of thinking became the dominant force in academic macroeconomics from the 1990s through to the financial crisis of 2008.

British economist John Maynard Keynes' idea in the aftermath of the Great Depression that increased

government expenditures and lower taxes can stimulate demand and pull the global economy out of a downturn became the dominant way of thinking for much of the 20th century.

The new Keynesian theory attempts to address, among other things, the sluggish behavior of prices and its cause, and how market failures could be caused by inefficiencies and might justify government intervention. The benefits of government intervention remains a flashpoint for debate. New Keynesian economists made a case for expansionary monetary policy, arguing that deficit spending encourages saving, rather than increasing demand or economic growth.

The Fall and Rise of Keynesian Economics

Dennis Robertson, one of Keynes's most articulate critics, once wrote that 'high brow opinion is like the hunted hare; if you stand in the same place, or nearly the same place, it can be relied upon to come around to you in a circle' (Robertson, 1956). Good examples that illustrate Robertson's observation have been provided by the revival of both classical and Keynesian ideas in their 'new' guise. In Chapters 5 and 6 we have seen how classical ideas have been given new form through the technically impressive and imaginative contributions inspired, in

particular, by Robert Lucas and Edward Prescott. In this chapter we survey how Keynesian economics has also undergone a 'renaissance' during the last 20 years.

We have seen in the previous chapters how the orthodox Keynesian model associated with the neoclassical synthesis came under attack during the 1970s. It soon became apparent to the Keynesian mainstream that the new classical critique represented a much more powerful and potentially damaging challenge than the one launched by the monetarists, which was of longer standing. Although orthodox monetarism presented itself as an alternative to the standard Keynesian model, it did not constitute a radical theoretical challenge to it (see Laidler, 1986). While Lucas's new classical monetary theory of aggregate instability had its roots in Friedman's monetarism, the new classical real business cycle school represents a challenge to Keynesianism, monetarism and Lucas's monetary explanations of the business cycle. The poor performance of Keynesian wage and price adjustment equations, during the 'Great Inflation' of the 1970s, based on the idea of a stable Phillips curve, made it imperative for Keynesians to modify their models so as to take into account both the influence of inflationary expectations and the impact of supply shocks. This was duly done and once

the Phillips curve was suitably modified, it performed 'remarkably well' (Blinder, 1986; Snowdon, 2001a). The important work of Gordon (1972, 1975), Phelps (1968, 1972, 1978) and Blinder (1979), all of whom are 'Keynesians', was particularly useful in creating the necessary groundwork which has subsequently allowed the Keynesian model to adapt and evolve in a way that enabled monetarist influences to be absorbed within the existing framework (Mayer, 1997; DeLong, 2000). Moreover, this transition towards a synthesis of ideas did not require any fundamental change in the way economists viewed the economic machine. For example, Gordon (1997) argues that his 'resolutely Keynesian' model of inflation, introduced in the mid-1970s and based on inertia, demand and supply shocks, within an expectations-augmented Phillips curve framework, performs very well in explaining the behaviour of output, unemployment and inflation during the 'Great Inflation' period. By introducing supply shocks into the Phillips curve framework, Gordon's 'triangle' model proved capable of explaining the positive correlation between inflation and unemployment observed during the 1970s. Meanwhile, debate continues on the relative importance of demand and

supply shocks as causes of the 'Great Inflation' (see Bernanke et al., 1997; Barsky and Kilian, 2001).

Despite these positive developments within Keynesian economics, by 1978 Lucas and Sargent were contemplating life 'After Keynesian Macroeconomics'. In their view the Keynesian model could not be patched up. The problems were much more fundamental, and related in particular to: (i) inadequate microfoundations which assume non-market clearing; and (ii) the incorporation in both Keynesian and monetarist models of a hypothesis concerning the formation of expectations which was inconsistent with maximizing behaviour, that is, the use of an adaptive rather than rational expectations hypothesis. In an article entitled 'The Death of Keynesian Economics: Issues and Ideas', Lucas (1980b) went so far as to claim that 'people even take offence if referred to as Keynesians. At research seminars people don't take Keynesian theorising seriously anymore; the audience starts to whisper and giggle to one another' (cited in Mankiw, 1992). In a similar vein, Blinder (1988b) has confirmed that 'by about 1980, it was hard to find an American academic macroeconomist under the age of 40 who professed to be a Keynesian. That was an astonishing intellectual turnabout in less than a decade, an

intellectual revolution for sure.’ By this time the USA’s most distinguished ‘old’ Keynesian economist had already posed the question, ‘How Dead is Keynes?’ (see Tobin, 1977). When Paul Samuelson was asked whether Keynes was dead here replied, ‘Yes, Keynes is dead; and so are Einstein and Newton’ (see Samuelson, 1988).

A Keynesian Resurgence

Lucas’s obituary of Keynesian economics can now be seen to have been premature because Robert Barro’s ‘bad guys’ have made a comeback (Barro, 1989a). By the mid-1980s Howitt (1986) was commenting on ‘The Keynesian Recovery’, and Blinder was discussing ‘Keynes After Lucas’ (1986) and ‘The Fall and Rise of Keynesian Economics’ (1988b). By the early 1990s Blinder had announced that ‘A Keynesian Restoration is Here’ (1992b), Mankiw (1992) proclaimed that Keynesian economics had been ‘reincarnated’ and Thirlwall (1993) enthusiastically discussed the ‘Keynesian Renaissance’. While in the late 1980s the Keynesian Promised Land was not yet in sight, Blinder (1988a) believed that ‘we may at long last be emerging from the arid desert and looking over the Jordan’. In answering his own (1977) question about the ‘death’ of Keynesian economics, Tobin (1987) later

provided an unequivocal answer in his essay, 'The Future of Keynesian Economics':

"One reason Keynesian economics has a future is that rival theories of economic fluctuations do not ... I hazard the prediction that neither of the two species of business cycle theory offered by new classical macroeconomics will be regarded as serious and credible explanations of economic fluctuations a few years from now. Whatever cycle theory emerges in a new synthesis will have important Keynesian elements ... Yes, Keynesian economics has a future because it is essential to the explanation and understanding of a host of observations and experiences past and present, that alternative macroeconomic approaches do not illuminate".

Tobin (1996) was particularly critical of the 'elegant fantasies' of the 'Robinson Crusoe macroeconomics' of real business cycle theory because it ignores the coordination question in macroeconomics. To economists such as Akerlof, Stiglitz, Tobin and Leijonhufvud, an essential task for macroeconomic theory is to explain in what circumstances the invisible hand does, and does not, efficiently coordinate the economic behaviour of numerous diverse agents.

Certainly the persistence of high unemployment in Europe during the 1980s and 1990s also called into question the plausibility of equilibrium explanations of the business cycle while also providing increasing 'credibility to Keynesian theory and policy'.

The central analytical message of the orthodox Keynesian school comprised the following main propositions:

1. an unregulated market economy will experience 'prolonged' periods of excess supply of output and labour in contradiction to 'Say's Law' of markets; that is, in Keynes's terminology, market economies will exhibit 'unemployment equilibrium';
2. aggregate macroeconomic instability (business cycles) are mainly caused by aggregate demand disturbances;
3. 'money matters' most of the time, although in very deep recessions monetary policy may be ineffective (Blanchard, 1990a; Krugman, 1998);
4. government intervention in the form of stabilization policy has the potential to improve macroeconomic stability and economic welfare.

While 'new' Keynesian economists would agree with these 'old' Keynesian propositions, we shall see that the new Keynesian models are very different in many aspects from their distant (1960s) cousins. While new

Keynesians disagree with the new classical explanations of instability, they do share two new classical methodological premises. First, macroeconomic theories require solid microeconomic foundations. Second, macroeconomic models are best constructed within a general equilibrium framework. However, as Greenwald and Stiglitz (1993a) point out, real business cycle theorists adopt microfoundations that describe a world of perfect information, perfect competition, zero transactions costs, and the existence of a complete set of markets. Problems associated with asymmetric information, heterogeneous agents and imperfect and incomplete markets are assumed away. The essence of the new Keynesian approach is to recognize the importance of a whole variety of real world imperfections. By rebuilding the microfoundations of Keynesian economics utilizing the findings of modern microeconomic theory, new Keynesian theorists have established a research programme aimed at rectifying the theoretical flaws which permeated the supply side of the 'old' Keynesian model. Because the typical market economy is riddled with numerous imperfections, aggregate supply does respond to changes in aggregate demand.

Although the term ‘new Keynesian’ was first used by Parkin and Bade in 1982 in their textbook on modern macroeconomics (1982b), it is clear that this line of thought had been conceived in the 1970s during the first phase of the new classical revolution. The burgeoning new Keynesian literature since then has been primarily concerned with the ‘search for rigorous and convincing models of wage and/or price stickiness based on maximising behaviour and rational expectations’ (Gordon, 1990). New Keynesian economics developed in response to the perceived theoretical crisis within Keynesian economics which had been exposed by Lucas during the 1970s. The paramount task facing Keynesian theorists is to remedy the theoretical flaws and inconsistencies in the old Keynesian model. Therefore, new Keynesian theorists aim to construct a coherent theory of aggregate supply where wage and price rigidities can be rationalized.

Both the old and new versions of classical economics assume continuous market clearing and in such a world the economy can never be constrained by a lack of effective demand. To many economists the hallmark of Keynesian economics is the absence of continuous market clearing. In both the old (neoclassical synthesis) and new

versions of Keynesian models the failure of prices to change quickly enough to clear markets implies that demand and supply shocks will lead to substantial real effects on an economy's output and employment. In a Keynesian world, deviations of output and employment from their equilibrium values can be substantial and prolonged, and are certainly interpreted as damaging to economic welfare. As Gordon (1993) points out, 'the appeal of Keynesian economics stems from the evident unhappiness of workers and firms during recessions and depressions. Workers and firms *do not act as if they were making a voluntary choice to cut production and hours worked.*' New Keynesians argue that a theory of the business cycle based on the failure of markets to clear is more realistic than the new classical or real business cycle alternatives. The essential difference between the old and new versions of Keynesian economics is that the models associated with the neoclassical synthesis tended to assume nominal rigidities, while the attraction of the new Keynesian approach is that it attempts to provide acceptable microfoundations to explain the phenomena of wage and price stickiness.

New Keynesian economists are an extremely heterogeneous group, so much so that the use of

the term 'school' is more convenient than appropriate. Nevertheless, economists who have made significant contributions to the new Keynesian literature, even if some of them may object to the label 'new Keynesian', include Gregory Mankiw and Lawrence Summers (Harvard); Olivier Blanchard (MIT), Stanley Fischer (Citigroup, and formerly at MIT); Bruce Greenwald, Edmund Phelps and Joseph Stiglitz (Columbia); Ben Bernanke (Princeton); Laurence Ball (Johns Hopkins); George Akerlof, Janet Yellen and David Romer (Berkeley); Robert Hall and John Taylor (Stanford); Dennis Snower (Birkbeck, London) and Assar Lindbeck (Stockholm). The proximity of US new Keynesians to the east and west coasts inspired Robert Hall to classify these economists under the general heading of 'Saltwater' economists. By a strange coincidence new classical economists tend to be associated with 'Freshwater' academic institutions: Chicago, Rochester, Minnesota and Carnegie-Mellon.

Core Propositions and Features of New Keynesian Economics

New Keynesian economics emerged mainly as a response to the theoretical crisis facing Keynesian economics that emerged during the 1970s. In their brief

survey of new Keynesian economics Mankiw and Romer (1991) define new Keynesian economics with reference to the answer a particular theory gives to the following pair of questions:

Question 1 Does the theory violate the classical dichotomy? That is, is money non-neutral?

Question 2 Does the theory assume that real market imperfections in the economy are crucial for understanding economic fluctuations?

Of the mainstream schools only new Keynesians answer both questions in the affirmative. Non-neutralities arise from sticky prices, and market imperfections explain this behaviour of prices. Thus, according to Mankiw and Romer, it is the 'interaction of nominal and real imperfections' that distinguishes new Keynesian economics from the other research programmes in macroeconomics. In contrast, the early real business cycle models gave a negative response to both questions.

80s new Keynesian developments had a distinctly non-empirical flavour. Those younger-generation economists seeking to strengthen the Keynesian model did so primarily by developing and improving the microfoundations of 'Fort Keynes' which had come under theoretical attack.

A crucial difference between new classical and new Keynesian models arises with regard to price-setting behaviour. In contrast to the price takers who inhabit new classical models, new Keynesian models assume price-making monopolistic, rather than perfectly competitive, firms.

Most new Keynesian models assume that expectations are formed rationally. This is clearly one area where the new classical revolution of the 1970s has had a profound effect on macroeconomists in general. However, some prominent Keynesians (Blinder, 1987b; Phelps, 1992), as well as some economists within the orthodox monetarist school (Laidler, 1992b) remain critical of the theoretical foundations and question the empirical support for the rational expectations hypothesis. Hence, although the incorporation of rational expectations in new Keynesian models is the norm, this need not always be the case.

Although new Keynesian economists share an interest in improving the supply side of Keynesian models, they hold a wide diversity of views relating to policy issues such as the debate over the importance of discretion, rather than rules, in the conduct of fiscal and monetary policy. New Keynesians regard both supply and demand

shocks as potential sources of instability but part company with real business cycle theorists particularly when it comes to an assessment of a market economy's capacity to absorb such shocks so that equilibrium (full employment) is maintained. Many new Keynesians (but not all) also share Keynes's view that involuntary unemployment is both possible and likely.

New Keynesian economists inhabit a brave new theoretical world characterized by imperfect competition, incomplete markets, heterogeneous labour and asymmetric information, and where agents are frequently concerned with fairness. As a result the 'real' macro world, as seen through new Keynesian eyes, is characterized by the possibility of coordination failures and macroeconomic externalities.

Because the literature reviewed here is so wide-ranging, it is convenient to divide the explanations of rigidities between those that focus on *nominal* rigidities and those that focus on *real* rigidities. A nominal rigidity occurs if something prevents the nominal price level from adjusting so as exactly to mimic nominal demand disturbances. A real rigidity occurs if some factor prevents real wages from adjusting or there is stickiness of one wage relative to another, or of one price relative to another.

Nominal Rigidities

Both orthodox and new Keynesian approaches assume that prices adjust slowly following a disturbance. But, unlike the Keynesian cross or IS–LM approaches, which arbitrarily assume fixed nominal wages and prices, the new Keynesian approach seeks to provide a microeconomic underpinning for the slow adjustment of both wages and prices.

Nominal wage rigidity

In traditional Keynesian models the price level is prevented from falling to restore equilibrium by the failure of money wages (costs) to adjust. In the new classical models developed by Lucas, Sargent, Wallace and Barro during the 1970s, any anticipated monetary disturbance will cause an immediate jump of nominal wages and prices to their new equilibrium values, so preserving output and employment. In such a world, systematic monetary policy is ineffective. Initially it was widely believed that this new classical policy ineffective proposition was a direct implication of incorporating the rational expectations hypothesis into macroeconomic models. Fischer (1977) and Phelps and Taylor (1977) showed that nominal disturbances were capable of producing real effects in models incorporating rational expectations, providing the

assumption of continuously clearing markets was dropped. Following these contributions it became clear to everyone that the rational expectations hypothesis did not imply the end of Keynesian economics. The crucial feature of new classical models was shown to be the assumption of continuous market clearing, that is, perfect and instantaneous wage and price flexibility.

The early Keynesian attempts to fortify their theoretical structure concentrated on nominal wage rigidities and the models developed by Fischer (1977) and Taylor (1980) introduced nominal inertia in the form of long-term wage contracts. In developed economies wages are not determined in spot markets but tend to be set for an agreed period in the form of an explicit (or implicit) contract. The existence of these long-term contracts can generate sufficient nominal wage rigidity for monetary policy to regain its effectiveness. It should be noted, however, that neither Fischer nor Phelps and Taylor pretend to have a rigorous microfoundation for their price- and wage-setting assumptions. Instead they take it for granted that there is a 'revealed preference' for long-term wage contracts reflecting the perceived disadvantages that accompany too frequent adjustments to wages and prices.

According to Phelps (1985, 1990) there are private advantages to both firms and workers from entering into long-term wage contracts:

1. Wage negotiations are costly in time for both workers and firms. Research must be carried out with respect to the structure of wage relativities both within and outside the negotiating organization. In addition, forecasts are required with respect to the likely future paths of key variables such as productivity, inflation, demand, profits and prices. The longer the period of the contract, the less frequently are such transaction costs incurred and in any case management will always tend to prefer a pre-set schedule for dealing with the complex issues associated with pay negotiations.

2. There always exists the potential for such negotiations to break down, with workers feeling that they may need to resort to strike action in order to strengthen their bargaining position. Such disruption is costly to both firms and workers.

3. It will not be an optimal strategy for a firm to 'jump' its wage rates to the new 'ultimate' equilibrium following a negative demand shock because if other firms do not do likewise the firm will have reduced its relative wage,

which would be likely to increase labour turnover, which is costly to the firm.

Thus the responsiveness of wage rates during a recession does not follow the new classical 'precision drill process'; rather we observe a 'ragged, disorderly retreat' as new information becomes available.

Nominal price rigidity

Keynesian models based on nominal wage contracting soon came in for considerable criticism (see Barro, 1977b). Critics pointed out that the existence of such contracts is not explained from solid microeconomic principles. A further problem relates to the countercyclical path of the real wage in models with nominal wage contracts.

As a result of these and other criticisms, some economists sympathetic to the Keynesian view that business cycles can be caused by fluctuations of aggregate demand switched their attention to nominal rigidities in the goods market, rather than continue with research into nominal wage inertia. Indeed, the term 'new Keynesian' emerged in the mid-1980s as a description of those new theories that attempted to provide more solid microfoundations for the phenomenon of nominal price rigidity. From this standpoint, the 'fundamental new

idea behind new Keynesian models is that of imperfect competition'. This is the crucial innovation which differentiates new Keynesians from Keynes, orthodox Keynesians, monetarists and new classicals.

If the process of changing prices were a costless exercise and if the failure to adjust prices involved substantial changes in a firm's profitability we would certainly expect to observe a high degree of nominal price flexibility. A firm operating under conditions of perfect competition is a price taker, and prices change automatically to clear markets as demand and supply conditions change. Since each firm can sell as much output as it likes at the going market price, a perfectly competitive firm which attempted to charge a price above the market-clearing level would have zero sales. There is also no profit incentive to reduce price independently, given that the firm's demand curve is perfectly elastic at the prevailing market price. Thus in this world of perfect price flexibility it makes no sense to talk of the individual firm having a pricing decision.

When firms operate in imperfectly competitive markets a firm's profits will vary differentially with changes in its own price because its sales will not fall to zero if it marginally increases price. Price reductions by

such a firm will increase sales but also result in less revenue per unit sold. In such circumstances any divergence of price from the optimum will only produce 'second-order' reductions of profits. Hence the presence of even small costs to price adjustment can generate considerable aggregate nominal price rigidity. This observation, due to Akerlof and Yellen (1985a), Mankiw (1985) and Parkin (1986), is referred to by Rotemberg (1987) as the 'PAYM insight'.

The PAYM insight makes a simple but powerful point. The private cost of nominal rigidities to the individual firm is much smaller than the macroeconomic consequences of such rigidities. A key ingredient of the PAYM insight is the presence of frictions or barriers to price adjustment known as 'menu costs'. These menu costs include the physical costs of resetting prices, such as the printing of new price lists and catalogues, as well as expensive management time used up in the supervision and renegotiation of purchase and sales contracts with suppliers and customers. To illustrate how small menu costs can produce large macroeconomic fluctuations, we will review the arguments made by Mankiw and by Akerlof and Yellen.

In imperfectly competitive markets a firm's demand will depend on (i) its relative price and (ii) aggregate demand. Suppose following a decline in aggregate demand the demand curve facing an imperfectly competitive firm shifts to the left. A shift of the demand curve to the left can significantly reduce a firm's profits. However, faced with this new demand curve, the firm may gain little by changing its price.

If the presence of menu costs and/or near rational behaviour causes nominal price rigidity, shocks to nominal aggregate demand will cause large fluctuations in output and welfare. Since such fluctuations are inefficient, this indicates that stabilization policy is desirable. Obviously if money wages are rigid (because of contracts) the marginal cost curve will be sticky, thus reinforcing the impact of menu costs in producing price rigidities.

Real Rigidities

Sources of real price rigidity

1. mild sensitivity of marginal cost to variations in output and procyclical elasticity of demand (implying a countercyclical markup) will contribute towards real price rigidity.
2. *Thick market externalities* In the real world buyers and sellers are not brought together without incurring search

costs. Consumers must spend time searching the market for the goods they desire and firms advertise in order to attract customers. Workers and employers must also spend time and resources searching the market. When markets are thick during periods of high economic activity it seems plausible that search costs will be lower than in the case in a thin market characterized by a low level of trading activity. It may also be the case that people are much more willing to participate in thick markets where a lot of trade is taking place and this leads to strategic complementarity; that is, the optimal level of activity of one firm depends on the activity of other firms. If these thick market externalities help to shift the marginal cost curve up in recessions and down in booms, then this will contribute to real price rigidity.

3. *Customer markets* The distinction between auction and customer markets has been developed by Okun (1975, 1981). The crucial characteristic of a customer market is a low frequency of search relative to the frequency of purchase (McDonald, 1992). Most products are sold through a process of shopping and, providing the costs of searching the market are non-trivial, the buyer will always have imperfect (limited) information concerning the lowest price in the marketplace. Because of the search

costs associated with the shopping process, sellers have some monopoly power even though there may be a large number of firms in the market, each selling a similar product. Since a large number of customers make repetitive purchases it is in the interests of any firm to discourage its customers from searching the market in order to find a better deal. Firms are therefore discouraged from frequently changing their prices, a practice which will provide an incentive for customers to look elsewhere. Whereas an increase in price will be noticed immediately by customers, a decrease in price will produce a much smaller initial response as it takes time for this new information to reach the buyers at other firms. This difference in the response rates of customers to price increases and decreases, and the desire of a firm to hold on to its regular customers, will tend to produce relative price stickiness.

4. *Price rigidity and the input-output table* Gordon (1981, 1990) has drawn attention to the complexity of decision making in a world where, typically, thousands of firms buy thousands of components containing thousands of ingredients from numerous other firms, many of which may reside overseas. 'Once decentralisation and multiplicity of supplier-producer relationships are

recognised, no single firm can perform an action that would eliminate the aggregate business cycle'. Because a firm is linked to thousands of other firms via a complex input-output table, it is impossible for it to know the identity of all the other agents linked together in the web of supplier-producer relationships. Because of this complexity there is no certainty that marginal revenue and marginal cost will move in tandem following an aggregate demand shock. There is no certainty for an individual firm that, following a decline in aggregate demand, its marginal cost will move in proportion to the decline in demand for its products. Many of its suppliers may be firms in other countries facing different aggregate demand conditions. To reduce price in these circumstances is more likely to produce bankruptcy for the particular firm than it is to contribute to the elimination of the business cycle because a typical firm will be subject to both local and aggregate demand shocks as well as local and aggregate cost shocks. As Gordon (1990) argues, in such a world no firm would be likely to take the risk of nominal GNP indexation that would inhibit its freedom and flexibility of action in responding to the wide variety of shocks which can influence the position of its marginal revenue and cost curves. Since indexation is undesirable

when there is substantial independence of marginal cost and aggregate demand, Gordon's input-output theory not only provides an explanation of real price rigidity but also translates into a theory of nominal rigidity. The fundamental reason for the gradual adjustment of prices is that this represents the safest course of action for firms operating in an uncertain world where information is inevitably imperfect.

5. ***Capital market imperfections*** An important obstacle to firms seeking external finance is the problem of asymmetric information between borrowers and lenders; that is, borrowers are much better informed about the viability and quality of their investment projects than lenders. One consequence of this will be that external finance will be more expensive to a firm than internal finance. During booms when firms are making higher profits there are more internal funds to finance various projects. Hence during recessions the cost of finance rises as the result of a greater reliance on external sources. If the cost of capital is countercyclical, this too will tend to make a firm's costs rise during a recession.

6. ***Judging quality by price*** Stiglitz (1987) has emphasized another reason why firms may be reluctant to

reduce price when faced with a decline in demand. In markets where customers have imperfect information about the characteristics of the products which they wish to buy, the price may be used as a quality signal. By lowering price a firm runs the risk that its customers (or potential customers) may interpret this action as a signal indicating a deterioration of quality.

Real wage rigidity

New Keynesian explanations of real wage rigidity fall into three main groups: (i) implicit contract theories; (ii) efficiency wage theories; and (iii) insider–outsider theories.

Implicit contract models The original implicit (non-union) contract models were provided by Bailey (1974), D.F. Gordon (1974) and Azariadis (1975). Implicit contract theory seeks to understand what it is that forms the ‘economic glue’ that keeps workers and firms together in long-term relationships since such arrangements, rather than the Walrasian auctioneer, dominate the labour market. Because firms seek to maintain the loyalty of their workforce they find it necessary to enter into unwritten (implicit) understandings with their workers. This ‘invisible handshake’ provides each worker with assurances concerning the terms of the working relationship under a variety of working circumstances. The

models of Bailey, Gordon and Azariadis examine the consequences of optimal labour contracts established between risk-neutral firms and risk-averse workers. In these circumstances the wage rate not only represents payment for labour services but also serves as an insurance against the risk of variable income in the face of shocks. A constant real wage smooths the individual worker's consumption stream and firms provide this 'insurance' since they are in a better position than workers to weather economic fluctuations, given their better access to capital and insurance markets. Because firms provide stable wages over time, workers, for their part, accept a real wage which is lower on average than the highly varying rates that would be dictated by market forces.

Efficiency wage models Any acceptable account of involuntary unemployment must explain why unemployed workers are unable to bid down wages to a level that will generate full employment. Efficiency wage theories suggest that it is not in a firm's interest to lower real wages because the productivity (effort or efficiency) of workers is not independent of the wage, rather real wages and worker effort are interdependent, at least over some meaningful range. Efficiency wage theory, described by

Gordon (1990) as the 'rage of the 80s', is surveyed by Yellen (1984), Akerlof and Yellen (1986), Katz (1986, 1988), Haley (1990), and Weiss (1991); see also Akerlof (1979, 2002), and Stiglitz (2002).

Solow (1979) provides the basic structure of efficiency wage models. In Solow's model, wage stickiness is in the employer's interest because wagecutting would lower productivity and raise costs. Because the wage enters a firm's short-run production function in a labour-augmenting way, a cost-minimizing firm will favour real wage rigidity.

The modern efficiency wage theories which have been put forward relate in general to the issues of selection and incentives and four categories of efficiency wage theory can be identified: (i) the adverse selection model (for example, Weiss, 1980); (ii) the labour turnover model (for example, Salop, 1979); (iii) the shirking model (for example, Shapiro and Stiglitz, 1984); and (iv) the fairness model (for example, Akerlof, 1982).

The adverse selection model In the adverse selection model, firms that offer higher wages will attract the best workers. Because the labour market is populated by heterogeneous individuals, firms have imperfect information about the productivity characteristics of job

applicants; the labour market is an excellent example of a market where asymmetric information predominates. When there is asymmetric information one party to a transaction has more information than the other party. In this case workers have more information about their own abilities, honesty and commitment than employers before they are hired and will attempt to send signals to potential employers that convey information about their qualities, such as educational qualifications, previous employment record and current wage if employed. Because of the non-trivial hiring and firing costs firms prefer not to hire workers and then find they need to fire those with low productivity. The firm may also need to invest considerable resources in training new employees before it becomes clear that they are not up to scratch. One way of avoiding this problem is for the firm to send a signal to the labour market in the form of offers of high wages. In the model presented by Weiss (1980) the wage offered by a firm influences both the number and quality of job applicants. If workers' abilities are closely connected to their reservation wage, then higher wage offers will attract the most productive job applicants and any applicant who offers to work for less than the efficiency wage will be regarded as a potential 'lemon'.

Firms will also be reluctant to lower wage rates even if faced with an excess supply of labour wishing to work at the prevailing wage offer because this would in all likelihood induce the most productive workers to quit voluntarily. As a result of these influences an underemployment equilibrium is attained. To avoid adverse selection problems firms will attempt to introduce screening devices, but these measures involve costs, as will the continuous monitoring of workers after they have been appointed.

The labour turnover model A second reason why firms may offer an efficiency wage in excess of the market-clearing wage is to reduce costly labour turnover. This approach received inspiration from the pioneering work of Phelps (1968) and Phelps et al. (1970) in the development of explanations of the natural rate of unemployment and search behaviour. The idea here is that workers' willingness to quit a job will be significantly reduced if a firm pays above the going rate. With quitting rates a decreasing function of the real wage, firms have an incentive to pay an efficiency wage to reduce costly labour turnover. In the model developed by Salop (1979), labour market equilibrium entails involuntary unemployment since all firms need to raise their wages

to deter workers from quitting. In situations where unemployment increases, the wage premium necessary to deter labour turnover will fall.

The shirking model In most occupations labour contracts are incomplete, which allows workers to exercise discretion with respect to their effort levels. Because contracts cannot specify every aspect of a worker's performance and duties there is 'effort discretion'. Since the collection of information relating to the productivity of individual workers and the continual monitoring of workers is very costly to the firm, the payment of an efficiency wage in excess of the market-clearing equilibrium wage can act as an incentive which will deter the worker from shirking. The threat of dismissal is not an effective deterrent in a labour market where workers can quickly find a new job at the same wage rate. However, if a firm pays a wage in excess of that available elsewhere, or if there is unemployment, workers have an incentive not to shirk, since there is now a real cost to being fired and shirking becomes more risky for each worker. In the Shapiro–Stiglitz (1984) model, the payment of an efficiency wage acts as a disincentive to shirking, and involuntary unemployment in equilibrium is an outcome of the problems firms face when monitoring is imperfect:

‘Within imperfect monitoring and full employment workers will choose to shirk.’ By being paid more than the going rate, workers now face a real penalty if they are caught shirking.

The fairness model Several economists have examined the adverse effects of ‘unfair wages’ and wage cuts on worker effort via the impact such cuts will have on the morale of the workforce. Sociological models stress such factors as the importance of wage relativities, status, relative deprivation, loyalty, trust and equity. In a series of papers, Akerlof (1982, 1984) and Akerlof and Yellen (1987, 1988, 1990) responded to Solow’s (1979, 1980) ‘piece of home-made sociology’ and developed models where feelings about equity and fairness act as a deterrent to firms to offer too low wages in the labour market.

Insider–outsider models Why don’t unemployed workers offer to work for lower wages than those currently paid to employed workers? If they did so, wages would be bid down and employment would increase. There appears to be an unwritten eleventh commandment: ‘Thou shalt not permit job theft by underbidding and stealing the jobs of thy comrades.’ The insider–outsider theory also attempts to explain why wage rigidity persists in the face of involuntary unemployment. The insider–outsider

approach to real wage rigidity was developed during the 1980s in a series of contributions by Lindbeck and Snower (1985, 1986, 1988a, 1988b). In this model the insiders are the incumbent employees and the outsiders are the unemployed workers. Whereas in efficiency wage models it is firms that decide to pay a wage higher than the market-clearing wage, in the insider–outsider approach the focus shifts to the power of the insiders who at least partially determine wage and employment decisions. No direct effects of wages on productivity are assumed. Where does the insider power come from? According to Lindbeck and Snower, insider power arises as a result of turnover costs (Vetter and Andersen, 1994). These include hiring and firing costs such as those associated with costs of searching the labour market, advertising and screening, negotiating conditions of employment, mandatory severance pay and litigation costs. Other important costs are production-related and arise from the need to train new employees. In addition to these well-known turnover costs, Lindbeck and Snower (1988a) also emphasize a more novel form of cost – the insider’s ability and incentive to cooperate with or harass new workers coming from the ranks of the outsiders. If insiders feel that their position is threatened by outsiders, they can refuse to

cooperate with and train new workers, as well as make life at work thoroughly unpleasant. By raising the disutility of work, this causes the outsiders' reservation wage to rise, making it less attractive for the firm to employ them. To the extent that cooperation and harassment activities lie within the control of workers, they can have a significant influence on turnover costs by their own behaviour. Because firms with high rates of turnover offer both a lack of job security and few opportunities for advancement, workers have little or no incentive to build reputations with their employers. Low motivation damages productivity and this represents yet another cost of high labour turnover. Because it is costly to exchange a firm's current employees for unemployed outsiders, the insiders have leverage which they can use to extract a share of the economic rent generated by turnover costs (the firm has an incentive to pay something to avoid costly turnover). Lindbeck and Snower assume that workers have sufficient bargaining power to extract some of this rent during wage negotiations. Although unions are not necessary for insider power, they enhance it with their ability to threaten strikes and work-to-rule forms of non-cooperation.

Policy Implications

Following the contributions of Fischer (1977), Phelps and Taylor (1977), it was clear that the new classical conclusion that government demand management policy was ineffective did not depend on the assumption of rational expectations but rather on the assumption of instantaneous market clearing. In new Keynesian models which emphasize sticky prices, money is no longer neutral and policy effectiveness is, at least in principle, re-established. Since in the Greenwald–Stiglitz model greater price flexibility exacerbates the problems of economic fluctuations, new Keynesians have also demonstrated the potential role for corrective demand management policies even if prices are flexible (but not instantaneously so). In a world where firms set prices and wages in an uncoordinated way, and where they are uncertain of the consequences of their actions, it is not surprising that considerable inertia with respect to prices and wages results. In a market economy endogenous forces can frequently amplify the disturbing impact of exogenous shocks. While new Keynesians tend to be more concerned with the way an economy responds to shocks than with the source of the shocks, experience during the past quarter-century has confirmed that economies can be

disturbed from the supply side as well as the demand side. Indeed, as Benjamin Friedman (1992) has observed, it is often practically and conceptually difficult to draw a clear distinction between what is and what is not the focal point of any disturbance. Because in new Keynesian models fluctuations are irregular and unpredictable, new Keynesians are not enthusiastic supporters of government attempts to 'fine-tune' the macroeconomy. Many new Keynesians (such as Mankiw) accept the monetarist criticisms relating to old-style Keynesianism as well as several of the criticisms raised by new classical economists, such as those related to dynamic consistency. There is no unified new Keynesian view on the extent of discretionary fiscal and monetary action that a government may take in response to aggregate fluctuations. However, most new Keynesians do see a need for activist government action of some form because of market failure, especially in the case of a deep recession. For example, Taylor (2000a) argues that while fiscal policy should normally be used to achieve long-term objectives such as economic growth, there is a strong case for the explicit use of fiscal expansionary policy in 'unusual situations such as when nominal interest rates hit a lower bound of zero'.

Because of uncertainty with respect to the kinds of problems an economy may confront in the future, new Keynesians do not support the fixed-rules approach to monetary policy advocated by Friedman (1968a) and new classical equilibrium theorists such as Lucas, Sargent, Wallace, Barro, Kydland and Prescott during the 1970s. If the monetarists and new classicists successfully undermined the case for fine-tuning, new Keynesians have certainly championed the case for what Lindbeck (1992) has referred to as ‘coarse tuning’—policies designed to offset or avoid serious macro-level problems.

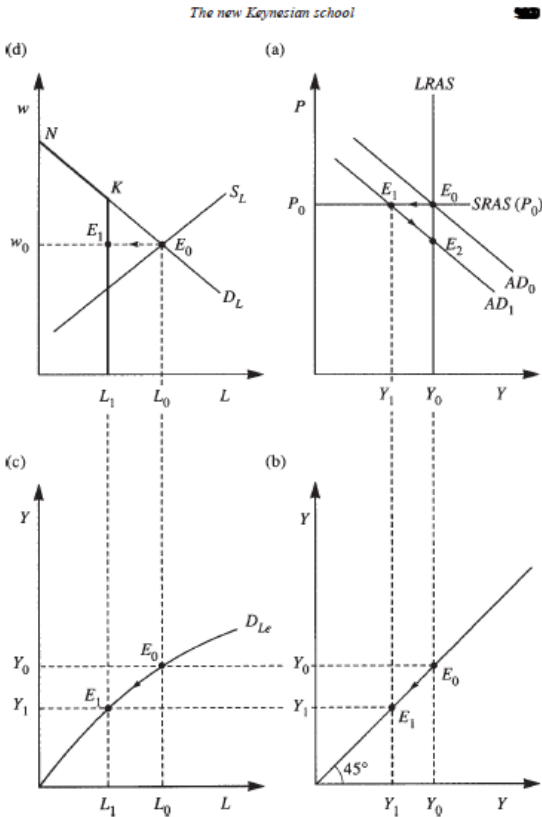
New Keynesian Business Cycle Theory

New Keynesian economists accept that the source of shocks which generate aggregate disturbances can arise from the supply side or the demand side. However, new Keynesians argue that there are frictions and imperfections within the economy which will amplify these shocks so that large fluctuations in real output and employment result. The important issue for new Keynesians is not so much the source of the shocks but how the economy responds to them.

Within new Keynesian economics there have been two strands of research relating to the issue of aggregate

fluctuations. The predominant approach has emphasized the importance of nominal rigidities. The second approach follows Keynes (1936) and Tobin (1975), and explores the potentially destabilizing impact of wage and price flexibility.

The impact of an aggregate demand shock in the new Keynesian model



Consider above Figure. In panel (a) we illustrate the impact of a decline in the money supply which shifts

aggregate demand from AD_0 to AD_1 . If a combination of menu costs and real rigidities makes the price level rigid at P_0 , the decline in aggregate demand will move the economy from point E_0 to point E_1 in panel (a). The decline in output reduces the effective demand for labour. In panel (c) the effective labour demand curve (DLe) shows how much labour is necessary to produce different levels of output. As the diagram shows, L_1 amount of labour is required to produce Y_1 amount of output. With prices and the real wage fixed at P_0 and w_0 , respectively, firms move off the notional demand curve for labour, DL , operating instead along their effective labour demand curve indicated by NKL_1 in panel (d). At the rigid real wage of w_0 , firms would like to hire L_0 workers, but they have no market for the extra output which would be produced by hiring the extra workers. The aggregate demand shock has produced an increase in involuntary unemployment of $L_0 - L_1$. The new Keynesian short-run aggregate supply curve $SRAS(P_0)$ is perfectly elastic at the fixed price level. Eventually downward pressure on prices and wages would move the economy from point E_1 to E_2 in panel (a), but this process may take an unacceptably long period of time. Therefore new Keynesian economists, like Keynes, advocate measures

which will push the aggregate demand curve back towards E_0 . In the new Keynesian model, monetary shocks clearly have non-neutral effects in the short run, although money remains neutral in the long run, as indicated by the vertical long-run aggregate supply curve ($LRAS$).

The failure of firms to cut prices even though this would in the end benefit all firms is an example of a 'coordination failure'. A coordination failure occurs when economic agents reach an outcome that is inferior to all of them because there are no private incentives for agents to jointly choose strategies that would produce a much better (and preferred) result. The inability of agents to coordinate their activities successfully in a decentralized system arises because there is no incentive for a single firm to cut price and increase production, given the assumed inaction of other agents. Because the optimal strategy of one firm depends on the strategies adopted by other firms, a strategic complementarity is present, since all firms would gain if prices were reduced and output increased. To many Keynesian economists the fundamental causes of macroeconomic instability relate to problems associated with coordination failure.

Hysteresis and NAIRU

Hysteresis and NAIRU are two words adopted by economists from physics. By the topic 'hysteresis and the NAIRU, policy implications', it is dealing with the two terms hysteresis and NAIRU in economics, and trying to find out the relationship between these two terms.

RELATION BETWEEN INFLATION AND UNEMPLOYMENT

The traditional economics since the time of Classist David Hume[1752] emphasizes that the supply of money influences both inflation and employment. The same argument even motivated modern theorist like Milton Friedman and Robert Lucas.

But business cycle theorists like Prescott laid emphasis on technological advancement and argued that money had no role in production and employment fluctuations. But this theory did not get much support. There is a wide agreement about monetary fluctuations push inflation and unemployment in opposite direction. That is economy face trade off between inflation and unemployment.

As per David Hume and others, monetary policy has a big say in the trade off between inflation and unemployment. But still the problem of trade off between these two in the opposite direction is not explained. For

this, many blamed on imperfect information, long term labour contracts, costs of price adjustment etcetera leading into theoretical and empirical questions.

This trade off is written as follows.

$$\Pi = k - aU$$

Where, Π =inflation

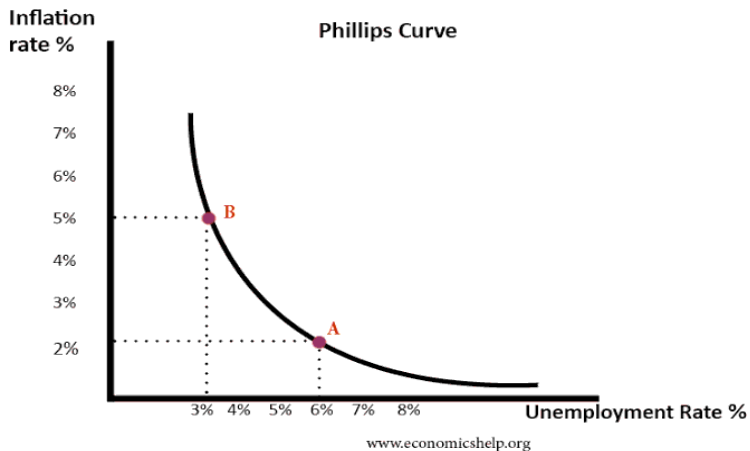
U =unemployment

k, a =parameters >0

This relationship only indicates that Π and U are negatively related. This trade off between inflation and unemployment is shown by Philips curve.

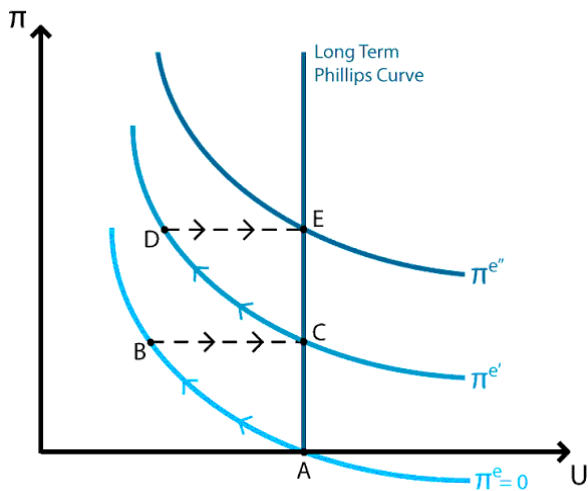
PHILLIPS CURVE

The Phillips curve is an economics concept developed by A. W. Phillips stating that inflation and unemployment have a stable and inverse relationship. The concept behind the Phillips curve states the change in unemployment within an economy has a predictable effect on price inflation. The inverse relationship between unemployment and inflation is depicted as a downward sloping, concave curve, with inflation on Y- axis and unemployment on X- axis. Increasing inflation decreases unemployment, and vice versa. Alternatively, a focus on decreasing unemployment also increases inflation, and vice versa.



EXPECTATIONS-AUGMENTED PHILLIPS CURVE

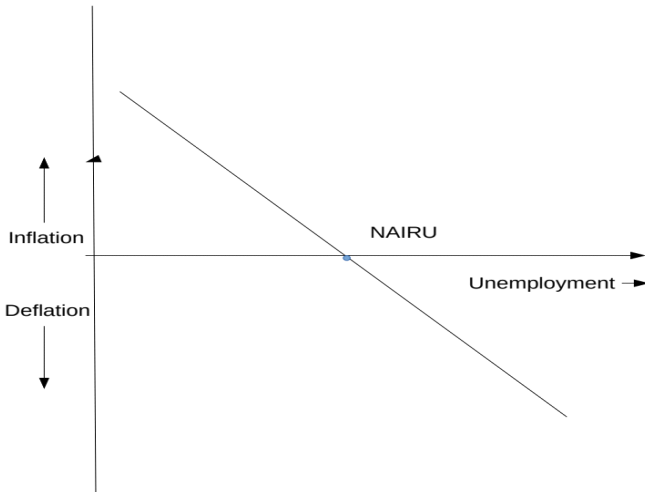
The expectations-augmented Phillips curve introduces adaptive expectations into the Phillips curve and first used to explain the monetarist's view of the Phillips curve.



Initially, unemployment and inflation are at point A. The government decides to embark on an expansionist monetary policy, which floods the markets with inexpensive credit, incentivising consumption. Expectations shift to point B along the Phillips curve, unemployment is reduced through economic stimulus with a trade off in the form of inflation. However, after a short period, agents will begin to associate expansionist policies with inflation, which means a drain on their resources, and they will push for higher wages. This will stop the consumption stimulus and also deinceptivise hiring. Eventually, agents will shift their expectations curve to point C. This is why, in the long run inflation has little effect on unemployment.

NAIRU

NAIRU is an acronym for non-accelerating inflation rate of unemployment, and refers to a theoretical level of unemployment below which inflation would be expected to rise. In other words it is a specific level of unemployment that does not cause inflation. If unemployment is at NAIRU level, inflation is constant.



HYSTERESIS

Hysteresis was a term used by Sir James Alfred Ewing, a Scottish physicist and engineer to refer systems, organisms and other things that have memory. For example, an iron piece exposed to the magnetic field a long time will have the magnetization even after removing from the field.

In the field of economics, hysteresis refers to an event in the economy that persist into the future, even after that led the event have been removed. An example of hysteresis in economics is that a delayed effect of

unemployment, a characteristic of recession will persist in the economy even after started recovery. In short, hysteresis refers to

- an event in the economy that the unemployment persist even after the removal of recession.
- That can be a delayed effect, as some times the rate of unemployment continue to rise even after the commencement of recovery.
- To indicate a permanent change in the attitude and skill of the work force even after the commencement recovery.

Hysteresis is the term which was used to explain the process in the expectations- augmented Phillips curve. The following table explains the above.

Unemployment in UK in the period of recession and after.

	YEAR	UNEMPLOYMENT
Recession/Deflation	1980	1.5 million
	1981	2.0 million
Recovery/Inflation	1985	2.0 million
	1986	3.0 million

During 1980-81, the UK entered a recession with falling output, falling inflation rate and rising unemployment. In the year 1981, unemployment increased from 1.5 million to 2.0 million. After 1981, UK started to recover from the recession, but unemployment remains the

same (2.0 million) even after four years. And in the year 1986, the unemployment increased to 3.0 million.

POLICY IMPLICATIONS

If there is no hysteresis in unemployment, then for example if the central bank wishes to lower the inflation rate it may shift to a contractionary monetary policy, which if not fully anticipated and believed will temporarily increase the unemployment rate; if the contractionary policy persists, the unemployment rise will eventually disappear as the unemployment rate returns to the natural rate. Then the cost of the anti- inflation policy will have been temporary unemployment. But if there is hysteresis, the unemployment rise initiated by the contractionary policy will never completely go away, and in this case the cost of anti- inflation policy will have been permanently higher unemployment, making the policy less likely to have greater benefits than costs.

It is important to note that hysteresis is more serious than that of unemployment relates to business cycles. It can not be over took by simple expansionary monetary or fiscal policies, but policies including that of job training and counselling is necessary.

Hysteresis and NAIRU are two terms taken from the subject physics and used to show the relationship

between inflation and unemployment. NAIRU is a specific level of unemployment that does not cause inflation. If unemployment is at NAIRU level, inflation is constant. Hysteresis refers to an event in the economy that persist into the future, even after that led the event have been removed.

The common belief in the case of inflation and unemployment is that when inflation increases, unemployment decreases. There is an inverse relation between inverse and unemployment. But hysteresis shows that, when economy started to move towards inflation after the time of recession, or after the NAIRU level of unemployment, unemployment remains constant or inflation increases. It can not be over took by simple expansionary monetary or fiscal policies, but policies including that of job training and counselling is necessary in order to improve employment.

Empirical evidence - Hysteresis and the NAIRU

Since the early 1970s the natural rate of unemployment ‘seems to have taken a wild ride’ in OECD countries. For OECD countries in general, unemployment in the 1980s and 90s was higher than during the ‘Golden Age’ of the 1950–73 period. The

steadily rising unemployment rates appear to have their origins in the two OPEC oil price shocks in 1973 and 1979 respectively and in the case of the European OECD countries, unemployment that averaged 1.7 per cent in the early 1960s rose to 11 percent by the mid-1990s. This high average also hides the large dispersion of unemployment rates across the European countries estimates show that the US natural rate of unemployment has also varied during this same period although the long-run unemployment repercussions of the 1980s recessions appear to have been much more persistent in Europe than in the USA. While the problem of inflation was a major policy concern during the 1970s and early 1980s, by the mid-1980s economists were once again turning their attention to the problem of unemployment, in particular the rise in the estimated NAIRU.

Hysteresis in the field of economics refers to an event in the economy that persists into the future, even after the factors that led to that event have been removed. Hysteresis can occur following a recession when the unemployment rate continues to increase despite growth in the economy.

Hysteresis was a term coined by Sir James Alfred Ewing, a Scottish physicist, and engineer (1855-1935), to

refer to systems, organisms, and fields that have memory. In other words, the consequences of an input are experienced with a certain time lag or delay. One example is seen with iron: iron maintains some magnetization after it has been exposed to and removed from a magnetic field. Hysteresis is derived from the Greek term meaning "a coming short, a deficiency."

Hysteresis in economics arises when a single disturbance affects the course of the economy. An example of hysteresis is the delayed effects of unemployment, whereby the unemployment rate can continue to rise even after the economy has begun recovering. The current unemployment rate is a percentage of the number of people in an economy who are looking for work but can't find any. In order to understand hysteresis, we must first explore the types of unemployment. In a recession, which is two consecutive quarters of contracting growth, unemployment rises.

Cyclical Unemployment

When a recession occurs, cyclical unemployment rises as the economy experiences negative growth rates. Cyclical unemployment rises when the economy performs poorly and falls when the economy is in expansion.

Natural Unemployment

Natural unemployment is not the result of a recession but instead, the result of a natural flow of workers to and from jobs. Natural unemployment explains why unemployed people exist in a growing, expansionary economy. Also called the natural rate of unemployment, it represents people, including college graduates or those laid off because of technological advances. The constant, ever-present movement of labor in and out of employment makes up natural unemployment. However, natural unemployment can be from both voluntary and involuntary factors.

Structural Unemployment

When workers are laid off due to a factory relocating or technology replaces their job, structural unemployment exists. Structural unemployment, which is a portion of natural unemployment, occurs even when an economy is healthy and expanding. It can be due to a changing business environment or economic landscape and last for many years. Structural unemployment is typically due to business changes such as factories moving overseas, technological changes, and lack of skills for new jobs.

MODULE V

NEW POLITICAL

MACROECONOMICS

“Most economists have now come to the realization that good economic advice requires an understanding of the political economy of the situation”.
(Rodrik, 1996)

That’s why we incorporate this module to our syllabus

Political Distortions and Macroeconomic Performance

The relationship between the economy and the political system has always attracted the interest of economists since it is obvious that politics will influence the choice of economic policies and consequently economic performance. During the last quarter of the twentieth century research into the various forms of interaction between politics and macroeconomics has become a major growth area, giving rise to a field known as ‘the new political macroeconomics’, a research area which has developed at the interface of macroeconomics, social choice theory and game theory. This burgeoning field makes specific use of the modern technical apparatus of economic analysis to investigate numerous key public policy issues. Of particular interest to macroeconomists is

the influence that the interaction of political and economic factors has on such issues as business cycles, inflation, unemployment, the conduct and implementation of stabilization policies, the relationship between dictatorship, democracy, inequality and economic growth, instability and conflict, the origin of persistent budget deficits, international integration and the size of nations. Major contributions to this field of activity, both in terms of theoretical analysis and empirical investigation, have come from the research of economists such as Daron Acemoglu, Alberto Alesina, Alan Drazen, Bruno Frey, Douglass Hibbs, William Nordhaus, Douglass North, Mancur Olson, Kenneth Rogoff, Fredrich Schneider, and Andrei Shleifer. In this module we will examine some of the progress that has been made with regard to the development of the ‘new political macroeconomics.

Political Influences on Policy Choice

Keynes (1926) believed that capitalism ‘can probably be made more efficient for attaining economic ends than any alternative yet in sight’. However, for that to be the case would necessarily involve an extension of government intervention in the economy. Classical economists did not deny that fluctuations in aggregate economic activity could occur, but they firmly believed

that the self-correcting forces of the price mechanism would prevail and restore the system to full employment within an acceptable time period. By the mid-1920s Keynes was already expressing his disillusionment with this classical *laissez-faire* philosophy which presented a vision of capitalist market economies where order and stability were the norm. For Keynes the wise management of capitalism was defended as the only practicable means of ‘avoiding the destruction of existing economic forms in their entirety’. Hence the orthodox Keynesian view evolved out of the catastrophic experience of the Great Depression and suggested that market economies are inherently unstable. Such instability generates welfare-reducing fluctuations in aggregate output and employment. As a result, ‘old’ Keynesians argue that this instability can and should be corrected by discretionary monetary and fiscal policies (see Modigliani, 1977; Tobin, 1996). Implicit in this orthodox Keynesian view is the assumption that governments actually desire stability.

Michal Kalecki (1943) was one of the first economists to challenge this rather naive assumption by presenting a Marxo-Keynesian model where a partisan government, acting on behalf of capitalist interests, deliberately creates politically induced recessions in order

to reduce the threat to profits resulting from the enhanced bargaining power of workers. This increased bargaining power is acquired as a direct result of prolonged full employment. In Kalecki's model it is the dominance of capitalists' interests which, by generating an unrepresentative political mechanism, causes the political business cycle.

Akerman (1947), anticipating later developments, suggested that the electoral cycle, by influencing economic policies, would also contribute to aggregate instability. This of course runs counter to traditional Keynesian models which treat the government as exogenous to the circular flow of income and in which politicians are assumed to act in the interests of society. According to Harrod (1951), Keynes was very much an elitist who assumed that economic policy should be formulated and implemented by enlightened people drawn from an intellectual aristocracy. These 'presuppositions of Harvey road' imply that Keynes thought that economic policies would always be enacted in the public interest. This benevolent dictator image of government acting as a platonic guardian of social welfare has increasingly been questioned by economists.

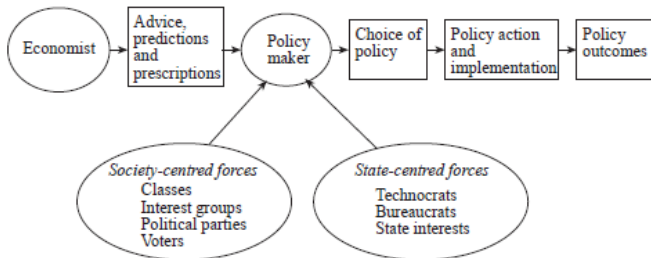
In particular the work of public choice economists has called into question the assumption that elected politicians will always pursue policies aimed at maximizing net social benefit (see Buchanan et al., 1978). During the early days of the Keynesian revolution Joseph Schumpeter also recognized that, since capitalist democracies are inhabited by politicians who compete for votes, this will inevitably influence policy decisions and outcomes (see Schumpeter, 1939, 1942). For example, from a public choice perspective Keynesian economics is seen to have fundamentally weakened the fiscal constitutions of industrial democracies by giving respectability to the idea that budget deficits should be accepted as a method of reducing the risk of recessions. Buchanan et al. (1978) argue that such a philosophy, operating within a democratic system where politicians are constantly in search of electoral favour, inevitably leads to an asymmetry in the application of Keynesian policies. Because voters do not understand that the government faces an intertemporal budget constraint, they

Underestimate the future tax liabilities of debt-financed expenditure programmes, that is, voters suffer from ‘fiscal illusion’ (see Alesina and Perotti, 1995a). Instead of balancing the budget over the cycle (as Keynes

intended), in accordance with Abba Lerner's (1944) principle of functional finance, stabilization policies become asymmetric as the manipulation of the economy for electoral purposes generates a persistent bias towards deficits. A deficit bias can also result from strategic behaviour whereby a current government attempts to influence the policies of future governments by manipulating the debt (Alesina, 1988). Given these considerations, it would seem that macroeconomists ought to consider the possibility that elected politicians may engage in 'economic manipulation for political profit' (Wagner, 1977). In the neoclassical political economy literature government is no longer viewed as exogenous; rather it is (at least) partially endogenous and policies will reflect the various interests in society (Colander, 1984). This is certainly not a new insight, as is evident from the following comment taken from Alexis de Tocqueville's famous discussion of *Democracy in America* (1835):

(It is impossible to consider the ordinary course of affairs in the United States without perceiving that the desire to be re-elected is the chief aim of the President... and that especially as [the election] approaches, his personal interest takes the place of his interest in the public good.)

Although Keynes had an extremely low opinion of most politicians, in the context of his era it never really crossed his mind to view the political process as a marketplace for votes. What Keynes had in mind was what can be described as a linear model of the policy-making process whereby the role of the economist is to offer advice, predictions and prescriptions, based on sound economic analysis, to role-oriented politicians responsible for policy making. In turn, it is assumed that that because politicians are looking for efficient solutions to major economic problems, they will automatically take the necessary actions to maximize social welfare by following the impartial and well-informed advice provided by their economic advisers. The traditional economist’s view of the policy-making process is illustrated in the upper part of Figure 5.1.



5.1 Influence on policy choice

The conventional approach to the analysis of policy making traditionally adopted the approach of

Tinbergen (1952) and Theil (1956). For example, in the traditional optimizing approach pioneered by Theil the policy maker is modelled as a ‘benevolent social planner’ whose only concern is to maximize social welfare. Thus the conventional normative approach to the analysis of economic policy treats the government as exogenous to the economy. Its only interest is in steering the economy towards the best possible outcome. Economic policy analysis is reduced to a technical exercise in maximization subject to constraint. From a new political economy perspective policy makers will be heavily influenced by powerful societal and state-centred forces rather than acting impartially on the advice of economists. Therefore the theoretical insights and policy advice based on those insights that economists can offer are mediated through a political system that reflects a balance of conflicting interests that inevitably arise in a country consisting of heterogeneous individuals.

In the society-centred approach, various groups exert pressure on the policy maker to ‘supply’ policies that will benefit them directly or indirectly. While neo-Marxists typically focus on class struggle and the power of the capitalist class, the new political economy literature highlights the influence of interest groups (for example

farmers), political parties and voters. In the state-centred approach, emphasis on the role of technocrats is equivalent to accepting the ‘benevolent dictator’ assumption. In contrast, the new political economy literature focuses on the impact that bureaucrats and state interests exert on the policy maker. The traditional approach to the policy-making process adopted by economists was neatly summarized by Tony Killick (1976) many years ago, in a critique of ‘The Possibilities of Development Planning’:

Economists have adopted a rational actor model of politics. This would have us see governments as composed of publicly-spirited, knowledgeable, and role-oriented politicians: clear and united in their objectives; choosing those policies which will achieve optimal results for the national interest; willing and able to go beyond a short-term point of view. Governments are stable, in largely undifferentiated societies; wielding a centralized concentration of power and a relatively unquestioned authority; generally capable of achieving the results they desire from a given policy decision.

In reality, societies are often fragmented and heterogeneous, especially if there are significant religious, ethnic, linguistic and geographical divides compounded by

extreme inequalities of income and wealth. As a result governments will frequently be preoccupied with conflict management, representing particular rather than general interests, responding to a constantly shifting balance of preferences. In such a world concepts such as the ‘national interest’ and ‘social welfare function’ have little operational meaning? ‘Decision making in the face of major social divisions becomes a balancing act rather than a search for optima; a process of conflict resolution in which social tranquility and the maintenance of power is a basic concern rather than the maximization of the rate of growth’ (Killick, 1976).

In modelling politico-economic relationships the new political macroeconomics views the government as standing at the centre of the interaction between political and economic forces. Once this endogenous view of government is adopted, the welfare-maximizing approach to economic policy formulation associated with the normative approach ‘is no longer logically possible’ (see Frey, 1978). Incumbent politicians are responsible for the choice and implementation of economic policy, and their behaviour will clearly be shaped by the various institutional constraints that make up the political system. Accordingly, a politico-economic approach to the analysis

of macroeconomic phenomena and policy highlights the incentives which confront politicians and influences their policy choices.

Role of government

What governments do, or do not do, will obviously have an important impact on economic growth and stability. Fiscal, monetary and exchange rate policies, along with policies towards international trade, competition, regulation, the labour market, education, technology, healthcare and the provision of key institutions such as property rights, all have a profound influence on economic performance. During the nineteenth century the economic role of government, as measured by government expenditure as a percentage of GDP, was around 10 per cent. By 1996 the government expenditure/GDP ratio had risen to an average of 45 per cent in developed OECD countries (see Tanzi and Schuknecht, 2000).

This expanding role of government activity in all countries during the twentieth century reflects the influence of several factors, in particular:

1. The impact of two world wars;

2. The Great Depression and subsequent Keynesian revolution;
3. The initial post-1945 influence of the Soviet state-led model of development;
4. Rising military expenditures associated with the cold war and global ideological competition between the USA and the USSR;
5. The influence of socialist/humanitarian thinking and a growing concern for greater equity via income redistribution;
6. The rise of welfare state capitalism;
7. The general recognition by economists of a wider range of important market failures beyond those initially identified by Adam Smith, particularly widespread distortions created by externalities, imperfect information and the problems of aggregate instability (Stiglitz, 2000, 2002).

At the beginning of the twentieth century the role of the state in the economic sphere was minimal. However, over the past one hundred years we have witnessed a dramatic change in the balance of economists' vision of the appropriate role of government in economic affairs. For the first 75 years of the twentieth century the role of the state expanded but during the last quarter of the

twentieth century there has been a marked change in economists' thinking on the desirability of this trend. This change, in large part, reflects the fact that over the past 25 years there has been an unmistakable convergence of beliefs among economists in the power of a market economy to deliver rising living standards compared to any known alternative.

What should be the role of government in an economy? This important question has been debated throughout history and permeates all important public policy issues. The current borders of the state have been mainly determined by historical events combined with developments in economic analysis that recognized the importance of both market failure and government failure. While the 1950s and 1960s represent the high-water mark of economists' belief in the capacity of governments to correct market failures, the 1970s and 1980s witnessed increasing scepticism about the expanding role for government and saw a return of economists' faith in markets. Among economists there was a growing recognition of various forms of government failure. The state was doing much more, but doing it less well. Even in the case where a government is attempting to act as a benevolent social planner and intervenes to correct market

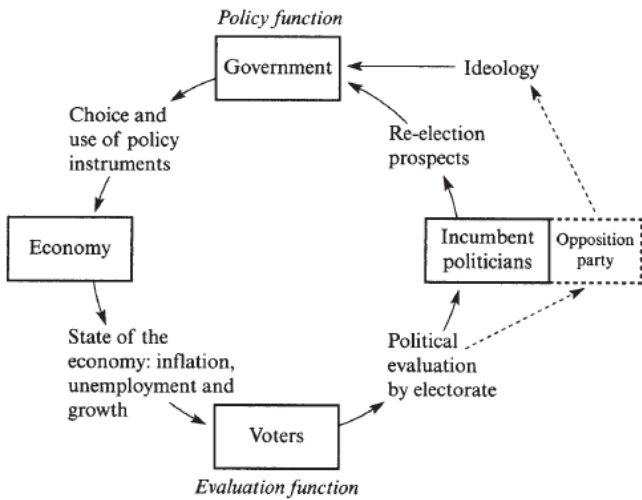
failures, it must do so via the use of agents (bureaucrats) who actually implement the strategy. Because these agents are likely to be self-interested and difficult to monitor, government interventions invariably provide opportunities for rent-seeking behaviour and corruption. From the 1970s onwards, the debate on market failure versus government failure gathered momentum and became a key feature of the economics literature. Many economists, influenced by the critiques of economists such as Peter Bauer, Milton Friedman, James Buchanan, Friedrich von Hayek, Robert Lucas Jr and Anne Krueger, began to accept that the state was trying to do too much. In many countries this had deleterious effects on the efficient functioning of markets, economic growth and stability. The idea of government acting as a ‘benevolent social guardian’ and the dubious assumption that state agencies are populated by ‘selfless bureaucrats’ had been severely eroded by experience. This does not imply that capitalism is a perfect system, that markets always work efficiently, or that there is not an important role for government. But it does mean that throughout the world ‘governments have come to plan less, to own less, and to regulate less, allowing instead the frontiers of the market to expand’ (Yergin and Stanislaw, 1999). Markets and effective accountable government is

complementary (see World Bank, 1997; Snowdon, 2001b; Stiglitz, 2002).

Politicians and Stabilization Policy

This ‘Downsian’ view of politicians indicates that government should be viewed as endogenous in macroeconomic models (see Downs, 1957). According to Frey (1978), the traditional Keynesian circular flow model needs to be modified to take account of self-interested government behaviour. The politico-economic system resulting from this modification is illustrated in Figure 5.2. There is no doubt that following the Keynesian revolution voters have increasingly held governments responsible for the state of the economy. But in choosing to whom they will delegate decision-making power, voters are faced with a *principal–agent* problem since the agent (government) may have different preferences which it can conceal from the imperfectly informed voters. As is evident from Figure 5.2, in the politico-economic circular flow model politicians are seen to be driven by a balance of both ideological and re-election considerations. Voters evaluate politicians on the basis of how successful they have been in achieving desirable economic goals such as high employment, low inflation and rapid growth of real disposable incomes. The state of the economy in the

immediate pre-election period is crucial and politicians are obviously aware that in order to survive in government it is preferable to have a buoyant economy. If economic conditions are unfavourable, voters may well choose to elect the opposition party and the incumbents lose office. Meanwhile the opposition party makes attractive promises to the electorate (recall, for example, George Bush Sr's famous 1988 pre-election pledge. 'Read my lips, no new taxes'). Hence economic conditions influence election results and the incentive to get elected directly influences the choice and use of macroeconomic policies.



Source: Adapted from Frey (1978).

Figure 5.1

Politicians are also driven by partisan considerations, but ideological programmes cannot be implemented unless parties first of all win or maintain power. During the past 25 years a considerable amount of empirical work has been undertaken to test the importance of key macroeconomic variables (such as inflation, unemployment and the growth of disposable income) for the popularity of governments. This work indicates that such macroeconomic variables are statistically significant and have an important influence on election outcomes (see Kramer, 1971; Tufte, 1975, 1978; Mosley, 1978; Fair, 1988; Schneider and Frey, 1988). Given that incumbent politicians occupy a position similar to that of a monopolist with respect to the supply of policies, it is hardly surprising that they may often succumb to temptation and use discretionary policies in order to maximize their re-election prospects. During the past 20 years or so economists have produced a rich array of politico-economic models which incorporate many of these considerations. The interdependence between the economy and the polity is now a well established area of research for economists interested in identifying the underlying causes of aggregate instability.

This research has attempted to answer a number of interesting questions, for example:

1. How important are economic factors in influencing voter choice? (Frey and Schneider, 1978a, 1978b);
2. Do opportunistic politicians manipulate the economy for political profit? (Nordhaus, 1975);
3. Do ideological (partisan) considerations lead to political parties producing a differentiated product? (Hibbs, 1977);
4. Can political cycles exist in a world of rational non-myopic voters and economic agents? (Alesina, 1987; Rogoff and Sibert, 1988);
5. Does the empirical evidence provide support for politico-economic models? (Alesina and Roubini with Cohen, 1997);
6. What are the policy implications of such models? (Alesina, 1989; Drazen, 2000a).

In what follows we shall show how economists have attempted to answer these and other questions.

Alternative Approaches to the ‘Political Business Cycle’: An Overview

In the theoretical literature on the political business cycle, which has developed since the mid-1970s, we can

distinguish four main approaches which have evolved in two separate phases. The assumptions underlying these four different approaches are summarized in Table 5.1 (see Alesina, 1988). During the first phase, in the mid- to late 1970s, Nordhaus (1975) reawakened interest in this area by developing an opportunistic model of the political business cycle. This was followed by Hibbs (1977), who emphasized ideological rather than office-motivated considerations. However, both the Nordhaus and Hibbs models (the ‘old’ political macroeconomics) were swept aside somewhat during the so-called rational expectations revolution which dominated macroeconomic discussions during the mid- to late 1970s. After a period of relative neglect a second phase of politicoeconomic models emerged in the mid-1980s and research in this area has continued to flourish ever since. Due to the influence of new classical theorists these new models incorporate the assumption of rational economic agents and voters. While economists such as Rogoff and Sibert (1988) developed rational opportunistic models, Alesina (1987) produced a rational partisan theory (the ‘new’ political macroeconomics). In what follows we shall examine all four of these approaches (plus the hybrid model of Frey and Schneider, 1978a, 1978b), each of which attempts to

endogenize the influence of political behaviour on the macroeconomy.

<i>Assumptions about voters and economic agents</i>		
<i>Assumptions about politicians</i>	<i>Non-rational behaviour, non-rational expectations</i>	<i>Rational behaviour, rational expectations</i>
Non-Partisan opportunistic politicians	Nordhaus (1975)	Rogoff and Sibert (1988)
Partisan ideological politicians	Hibbs (1977)	Alesina (1987)

Source: Alesina (1988).

Table 5.1

The Nordhaus Opportunistic Model

The modern literature on political business cycles was stimulated by the seminal paper of Nordhaus (1975). In the electoral model popularized by Nordhaus the party in power ‘chooses economic policies during its incumbency which maximize its plurality at the next election’. Since voters are influenced by a government’s macroeconomic performance before an election, politicians will be tempted to manipulate policy instruments so that policy outcomes are most favourable around the election period. The important consequence of

such behaviour is that policies are implemented in democracies which are biased against future generations (see also Lindbeck, 1976; MacRae, 1977). Thus while elections and electoral competition are necessary to increase the accountability of government, they are also likely to introduce potentially damaging distortions into the policy-making process. In producing this result Nordhaus makes a number of important assumptions, namely:

N1 The political system contains two parties between which there has been complete policy convergence as predicted by the median voter theorem of Downs (1957).

N2 Both parties are interested in maximizing political profit rather than engaging in ideological programmes. Only election outcomes matter to these *opportunistic* non-partisan politicians.

N3 The timing of elections is exogenously fixed.

N4 Individual voters are identical and have aggregate unemployment (U_t) and inflation (P_t) in their preference functions and low inflation and unemployment rates are preferred. Policy makers are fully informed of voters' preferences but have no specific preferences with respect to inflation and unemployment.

N5 Voters make political choices based on the past performance of incumbent politicians in managing the economy during their term of office. Not only are voters *retrospective* in their voting behaviour (they have no foresight); they also have a decaying memory (a high discount rate on past economic performance), that is, they are *myopic*.

N6 The macroeconomic system can be described by an expectations-augmented Phillips curve where the short-run trade-off is less favourable than the long-run trade-off. Voters are ignorant of the macroeconomic framework.

N7 Expectations of inflation (P^*t)_e are formed adaptively, that is, agents are backward-looking. N8 Policy makers can control the level of unemployment by manipulating aggregate demand via fiscal and monetary policies. Nordhaus assumes (N4) that policy decisions will be based on the observed aggregate voting function (Vt) which reflects individual preferences; this is described by equation (10.1):

$$Vt \square g(Ut, P^*t), \text{ where } g'(Ut) \square 0, \text{ and } g'(P^*t) \square 0 \text{ (10.1)}$$

In equation (5.1) votes are a decreasing function of \dot{P} and U . Figure 5.3 shows the contours (iso-vote lines) of the aggregate voting function (V_1 , V_2 and so on), which indicate the percentage of votes acquired by the incumbents for a given policy outcome. Since inflation and unemployment are ‘bads’, $V_1 > V_2 > V_3 > V_4$. Voters prefer any point on V_1 to any point on V_2 but are indifferent between points on the same contour. Governments seeking to win elections will endeavour to manipulate the economy towards the highest feasible vote contour so as to coincide with the election period.

The macroeconomic framework adopted by Nordhaus involves an expectations- augmented Phillips curve framework summarized by equations (10.2)– (10.5).

Expectations-augmented Phillips curve:

$$\dot{P}_t = f(U_t) + \lambda \dot{P}_t^e \quad (10.2)$$

Adaptive expectations hypothesis:

$$\dot{P}_t^e - \dot{P}_{t-1}^e = \alpha[\dot{P}_{t-1} - \dot{P}_{t-1}^e], \text{ and } \alpha > 0 \quad (10.3)$$

Equilibrium condition:

$$\dot{P}_t = \dot{P}_t^e \quad (10.4)$$

Long-run Phillips curve trade-off:

$$\dot{P}_t = \frac{f(U)}{(1-\lambda)} \quad (10.5)$$

Nordhaus assumes that $1 > \alpha > 0$ which yields a long-run Phillips curve which is less favourable (steeper) than the short-run relationship. In Figure 10.3 the short-run curves are indicated by *SG*, *SW* and *SM* and the position of each curve depends on the expected rate of inflation. The long-run Phillips curve is labelled *LRPC*. If the α coefficient is unity, the Phillips curve becomes a vertical line at the natural rate of unemployment (see Friedman, 1968a). However, as Nordhaus (1975, p. 176) notes, 'a vertical long-run Phillips curve makes no difference in principle' to the substantial conclusions of the model.

The Hibbs Partisan Model

In the Nordhaus model there is policy convergence in that all governments behave in the same opportunistic way, and all voters are assumed to have identical preferences over inflation and unemployment. An alternative approach is to view voters and politicians as *ideological* or *partisan*. Politicians view winning elections as a means of putting into action their partisan programme and heterogeneous voters will clearly have different preferences over inflation and unemployment. Hibbs (1977) examined the post-war patterns of economic

policies and outcomes in 12 advanced capitalist democracies for the period 1945–69 in order to test the proposition that left- and rightwing governments have different preferences with respect to the trade-off between inflation and unemployment. In particular, Hibbs argues that his evidence supports the proposition that left-wing governments prefer a lower U , higher \dot{P} outcome than right-wing governments. We can represent this difference in preferences in terms of differences in loss functions. Equations (10.8) and (10.9) show the loss (cost) functions in terms of unemployment and inflation for two parties, a right-wing party = C_R , and a left-wing party = C_L (see Alesina, 1987).

$$C_R = \frac{(U_R - U_R^*)^2}{2} + \phi_R \frac{(\dot{P}_t - \dot{P}_R^*)^2}{2}$$

$$C_L = \frac{(U_L - U_L^*)^2}{2} + \phi_L \frac{(\dot{P}_t - \dot{P}_L^*)^2}{2}$$

Here U_R^* and \dot{P}_R^* are the unemployment and inflation targets of the right wing party and ϕ_R is the relative weight placed on deviations of inflation from target ($\dot{P}_t - \dot{P}_R^*$) relative to deviations of unemployment from target ($U_R - U_R^*$). The partisan differences can be summed up as follows.

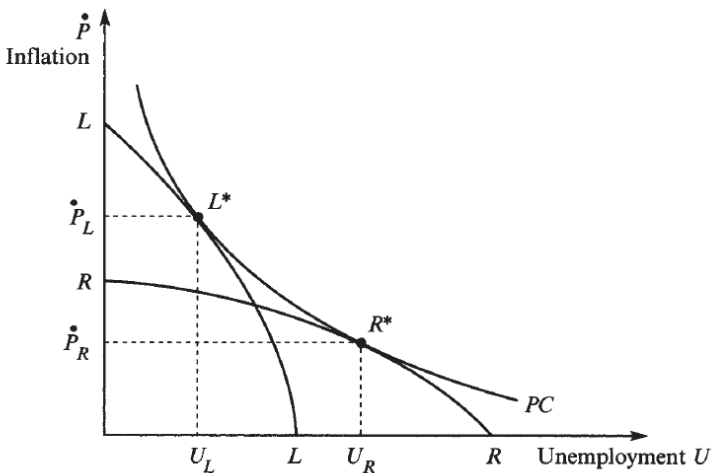
$$U_L^* \leq U_R^*$$

$$\dot{P}_L^* \geq \dot{P}_R^*$$

$$\phi_L \leq \phi_R$$

Partisan effects are further illustrated in Figure 10.5, where RR and LL indicate the respective preferences of right- and left-wing politicians. Given the assumption of a stable exploitable Phillips curve trade-off, left-wing governments will choose a combination of \dot{P}_L and U_L , indicated by point L^* , and right-wing governments will choose a combination of \dot{P}_R and U_R , indicated by point R^* .

Figure 5.5



Figures 5.5

According to Hibbs, 'different unemployment/inflation outcomes have important class-linked effects on the distribution of national income'. The revealed preference of policy makers reflects the interests of the social groups who typically provide support for different parties. Since macroeconomic policies have distributional consequences, Hibbs rejects Nordhaus's assumption (N1) of policy convergence. According to Hibbs, the empirical evidence supports the partisan view that 'a relatively low unemployment-high inflation macroeconomic configuration is associated with substantial relative and absolute improvements in the economic well-being of the poor'. Because tight labour markets tend to generate income-equalizing effects, we should expect left-wing governments to favour a point on the Phillips curve trade-off indicated by L^* . Right-wing parties view inflation as more damaging to their constituency of upper middle-class voters and choose a position such as R^* . According to Hibbs, the empirical evidence supports the ideological view of macroeconomic policy making. The differing interests of various occupational groups is reflected in the policy preferences of left- and right-wing political parties. In an examination

of 12 Western European and North American countries over the period 1945–69 Hibbs found strong support for the proposition that the mean inflation rate is higher and the mean unemployment rate lower, the greater the percentage of years that labour/socialist parties have been in office. In addition to the static aggregated evidence, Hibbs also found that the time series evidence for the USA and the UK supports the proposition that Democratic and Labour administrations have usually reduced unemployment while Republican and Conservative governments have tended to increase unemployment. Hibbs (1987) also reports significant partisan effects on the distribution of income and Bartels and Brady (2003) conclude that the ‘consistent partisan differences in economic performance identified by Hibbs remain alive and well two decades later’ and partisan influences have had a ‘profound influence on the workings of the US economy’. These influences are summarized in Table 5.2.

Partisan influence on macroeconomic outcomes, USA, 1948–2001

<i>Macroeconomic outcomes</i>	<i>Republican presidents</i>	<i>Democratic presidents</i>	<i>Partisan difference</i>
Average unemployment (%)	6.35	4.84	1.51
Average inflation (%)	3.95	3.97	-0.02
Average annual GDP growth (%)	2.86	4.08	-1.22

Source: Adapted from Bartels and Brady (2003).

Hence there is evidence supporting the Hibbs model that systematic differences exist in the policy choices and outcomes of partisan governments. Hibbs argues that this is in line with the subjective preferences of the class based political constituencies of right- and left-wing political parties.

The Decline and Renaissance of Opportunistic and Partisan Models

The 1970s were a turbulent time for the capitalist democracies as the ‘Golden Age’ of low inflation, low unemployment and above average growth came to an end. The stagflation crisis of the 1970s also brought to an end the Keynesian consensus which had dominated macroeconomic theory and policy making in the quarter-century following the Second World War. In the wake of the monetarist counter-revolution, Lucas inspired a rational expectations revolution in macroeconomics. By the mid-1970s models which continued to use the adaptive

expectations hypothesis were coming in for heavy criticism from new classical theorists, as the hypothesis implies that economic agents can make systematic errors. In market-clearing models with rational expectations the assumption that economic agents are forward-looking makes it more difficult for the policy maker to manipulate real economic activity. There is no exploitable short-run Phillips curve which policy makers can use. Pre election monetary expansions, for example, will fail to surprise rational agents because such a manoeuvre will be expected. The rational expectations hypothesis also implies that voters will be forward- looking and will not be systematically fooled in equilibrium. According to Alesina (1988), ‘the theoretical literature on political business cycles made essentially no progress’ after the contributions of Nordhaus (1975), Lindbeck (1976) and MacRae (1977) because of the ‘devastating’ effect of the rational expectations critique. The Nordhaus model involves an exploitable short-run Phillips curve trade-off combined with myopic voters. Once the rational expectations hypothesis is introduced, however, voters can be expected to recognize the incentives politicians have to manipulate the economy for electoral profit. Given that US presidential elections are held on a regular four-year

basis, it is difficult to believe that rational voters and economic agents would allow themselves to be systematically duped by the macroeconomic manipulations of self-interested politicians. Moreover, it is difficult to reconcile the predictions of the Nordhaus model with situations where monetary policy is conducted by an independent central bank, unless government can in some way pressurize the central bank to accommodate the incumbent government's preferred monetary policy (on this see Havrilesky, 1993; Woolley, 1994). However, Blinder, in discussing this issue, denies that political pressure was an issue during his period as Vice Chairman at the US Federal Reserve, 1994–6. In his experience the political influence on monetary policy was 'trivial, next to zero', although he agrees that this was not the case during the Richard Nixon–Arthur Burns era (see Snowden, 2001a).

The Hibbs model also has major theoretical shortcomings, especially with respect to the stability of the Phillips curve trade-off implicit in his analysis. Remarkably, Hibbs makes no mention of the expectations-augmented Phillips curve in his 1977 paper even though the Friedman–Phelps theory was a decade old and by then a well-established idea, even among Keynesians (see

Gordon, 1975, 1976; Blinder, 1988b, 1992a; Laidler, 1992a). The assumption of rationality also has implications for the Hibbs model. Since the output and employment effects of expansionary and contractionary demand management policies are only transitory in new classical models, the identification of partisan influences on macroeconomic outcomes will be harder to detect (see Alesina, 1989).

Alt (1985) concluded that partisan effects are not permanent but occur temporarily after a change of government.

In addition to the theoretical shortcomings of the early political business cycle literature, the Nordhaus model also failed to attract strong empirical support, with the econometric literature yielding inconclusive results (see Mullineux et al., 1993). While McCallum (1978) rejected the implications of the Nordhaus model for US data, Paldam (1979) could only find weak evidence of a political business cycle in OECD countries. Later studies, such as those conducted by Hibbs (1987), Alesina (1988, 1989), Alesina and Roubini (1992), Alesina and Roubini with Cohen (1997) and Drazen (2000a, 2000b), also find little evidence of a political business cycle in data on unemployment and GNP growth for the US and other

OECD economies. This also applies where the timing of elections is endogenous (see Alesina et al., 1993). More favourable results for the Nordhaus model are reported by Soh (1986), Nordhaus (1989), Haynes and Stone (1990) and Tufte (1978), who found some evidence of pre election manipulation of fiscal and monetary policy for the USA. In addition,

Drazen (2000a) distinguishes between empirical predictions that focus on policy outcomes (inflation, unemployment, growth) and those that focus on policy instruments (taxes, government expenditure interest rates) and concludes that ‘the evidence for opportunistic manipulation of macroeconomic policies is stronger than for macroeconomic outcomes’. With respect to policy outcomes there is more support for the opportunistic political business cycle theory coming from post-electoral inflation behaviour than can be found in the pre electoral movement of real GDP and unemployment. Drazen also concludes that the evidence in favour of opportunistic manipulation of policy instruments is much stronger for fiscal policy than it is for monetary policy.

A significant problem for partisan theories in general is the argument and evidence presented by Easterly and Fischer (2001) that low inflation helps the

poor more than the rich. Inflation acts as a financial tax that hits the poor disproportionately because they tend to hold more of their wealth in cash relative to their income than the rich, whereas the rich are more likely to have access to various financial instruments that allow them to hedge against inflation. In addition the poor obviously depend more on minimum wages and state-determined income payments that are not always indexed to protect against the effects of inflation (see Snowden, 2004b). Easterly and Fischer present evidence drawn from an international poll of over 30 000 respondents from 38 countries and the responses indicate that the poor themselves are more strongly averse to inflation than those with higher incomes. This undermines a key assumption of Hibbs's model that the rich are more inflation-averse than the poor.

By the mid-1980s the politico-economic literature had reached a new ebb. Zarnowitz (1985), in his survey of business cycle research, devotes one footnote to the idea of an electoral cycle and refers critically to the 'strong' and 'questionable' assumptions of such models as well as the lack of supporting evidence. The same neglect is also a feature of Gordon's (1986) edited survey of *The American Business Cycle*. Following a period of relative neglect, the

literature on the relationship between politics and the macroeconomy underwent a significant revival since the mid-1980s (see Willet, 1988). Economists responded to the rational expectations critique by producing a new generation of rational politico-economic models. Like the first phase in the 1970s, the second phase of politicoeconomic models consisted of opportunistic and partisan versions of the interaction between politics and the macroeconomy. In the next two sections we examine the main features of rational political business cycle models and the rational partisan theory.

Rational Political Business Cycles

Recent work in the political business cycle tradition has shown that some of the insights of Nordhaus (1975) can survive even in a model with rational expectations, providing there is asymmetric information between voters and policy makers. In other words, voters need not be myopic in order for politicians to generate political business cycles. Optimal policies are only likely in a world of political competition when there is unanimity about social objectives and symmetric information between agents, voters and politicians. Since these conditions are unlikely ever to hold, politicians have the

opportunity to follow non-optimal policies. Providing there is some element of imperfect information, so that forward-looking voters are not fully informed about some characteristics of the political and economic environment, incumbents have the opportunity of creating ‘a temporary illusion of prosperity’ (Alesina, 1989) in order to gain favour with the electorate.

In the rational opportunistic models proposed by Cukierman and Meltzer (1986), Rogoff and Sibert (1988), Rogoff (1990) and Persson and Tabellini (1990), electoral cycles are created in policy variables such as government spending, taxes and monetary growth, and such cycles are made possible by temporary information asymmetries. Although rational voters aim to choose politicians who they believe can deliver the highest utility, they lack information on the competence of different policy makers. Voters acquire information on competence by observing outcomes. Therefore before elections the incumbents engage in a ‘signalling process’ which aims to persuade voters that the politicians in power are competent. Such signalling is always observed in the UK during the Chancellor of the Exchequer’s annual budget speech, especially just before an election.

Rogoff and Sibert define competence as the ability to reduce waste in the budget process; that is, competent governments can produce more public goods and transfers for a given amount of tax revenue. Incumbents have the potential to create a temporary fiscal boost (or fail to impose necessary tax increases), which is popular with voters. Because the budgetary process is so complicated the inevitable post-election tax increases needed to finance the pre-election boost are not foreseen even by rational voters, due to their incomplete information. Rather than generating a regular inflation–unemployment cycle as in the Nordhaus model, rational political business cycle theories predict the manipulation of various policy instruments before and after the election. The temptation of incumbents to cut taxes and increase spending before an election in order to appear competent clearly generates departures from optimality. Hence opportunistic behaviour survives in rational opportunistic models, although such models give rise to a different set of empirical predictions compared to the original Nordhaus model. In particular, because of rational expectations, any cycles resulting from the manipulation of monetary and fiscal policies will be predicted to be less regular and of shorter duration. Finally, we should note that developing-country

governments appear to behave in a similar way to their counterparts in richer countries. In a study of 35 developing countries Schuknecht (1996) found ‘considerable evidence’ in favour of election generated fiscal policy cycles although the opportunities for self-interested political behaviour are less in more open economies.

Policy Implications of Politico-Economic Models: An Independent Central Bank?

In introducing ‘The New Monetary Policy Framework’ for the UK economy on 6 May 1997, which established ‘operational independence’ for the Bank of England, Chancellor Gordon Brown, in an official statement, provided the following rationale for the government’s strategy (Brown, 1997, emphasis added):

We will only build a fully credible framework for monetary policy if the long term needs of the economy, not short-term political considerations guide monetary decision-making. *We must remove the suspicion that short-term party political considerations are influencing the setting of interest rates.*

Chancellor Brown’s decision to grant much greater independence to the Bank of England had its origins in a

1992 Fabian Society paper entitled ‘Euro Monetarism’, written by Ed Balls, Brown’s economic adviser. As a former student of Larry Summers at Harvard, Balls was familiar with the empirical work on central bank independence produced by Alesina and Summers (1993). In a visit to the USA in March 1997, Shadow Chancellor Brown and his economic adviser met both Alan Greenspan and Larry Summers. And so was born the strategy to go for immediate greater central bank independence if elected. The general debate on the relative merits of rules versus discretion in the conduct of fiscal and monetary policy was given a new stimulus by the research surveyed in Chapters 5 and 7. Since the non-optimal use of monetary and fiscal instruments lies at the heart of the various strands of the political business cycle literature, most of this work points towards the desirability of establishing a policy regime which curtails the incentives policy.

The Political Economy of Debt and Deficits

During the mid-1970s several OECD countries accumulated large public debts. This rise in the debt/GNP ratios during peacetime among a group of relatively homogeneous economies is unprecedented and difficult to

reconcile with the neoclassical approach to optimal fiscal policy represented by the ‘tax smoothing’ theory. While countries such as Greece, Italy and Ireland had accumulated public debt ratios in excess of 95 per cent in 1990, other countries such as Germany, France and the UK had debt ratios in 1990 of less than 50 per cent .

In order to explain the variance of country experience and the timing of the emergence of these rising debt ratios, Alesina and Perotti (1995b) argue that an understanding of politico-institutional factors is ‘crucial’. In explaining such wide differences Alesina and Perotti conclude that the two most significant factors are:

1. The various rules and regulations which surround the budget process; and
2. The structure of government; that is, does the electoral system tend to generate coalitions or single party governments?

In the face of large economic shocks weak coalition governments are prone to delaying necessary fiscal adjustments. While a ‘social planner’ would react quickly to an economic shock, in the real world of partisan and opportunistic politics a ‘war of attrition’ may develop which delays the necessary fiscal adjustment (see Alesina and Drazen, 1991). Persson and Tabellini (2004) have

investigated the relationship between electoral rules, the form of government and fiscal outcomes. Their main findings are that: (i) majoritarian elections lead to smaller government and smaller welfare programmes than elections based on proportional representation; and (ii) presidential democracies lead to smaller governments than parliamentary democracies.

Research by Alesina and Perotti (1996b, 1997a) also indicates that the ‘composition’ of a fiscal adjustment matters for its success in terms of its sustainability and macroeconomic outcome. Two types of adjustment are identified: Type 1 fiscal adjustments rely on expenditure cuts, reductions in transfers and public sector wages and employment; Type 2 adjustments depend mainly on broad-based tax increases and cuts in public investment. Alesina and Perotti (1997a) find that Type 1 adjustments ‘induce more lasting consolidation of the budget and are more expansionary while Type 2 adjustments are soon reversed by further deterioration of the budget and have contractionary consequences for the economy’. Hence any fiscal adjustment that ‘avoids dealing with the problems of social security, welfare programs and inflated government bureaucracies is doomed to failure’ (see Alesina, 2000). Type 1 adjustments are also likely to have a more

beneficial effect on ‘competitiveness’ (unit labour costs) than policies which rely on distortionary increases in taxation (see Alesina and Perotti, 1997b).

Political and Economic Instability:

A further related area of research in the politico-economic sphere concerns the relationship between political and economic stability. There are good reasons to believe that economic performance will suffer if a country is politically unstable. Frequent riots, politically motivated violence and revolution inevitably have a negative impact on a country’s economic performance. As Keynes always highlighted, uncertainty has a depressing effect on investment and productive entrepreneurship. Alesina’s partisan theory predicts that instability will increase the greater the partisan effects because widely divergent policies create uncertainty and destabilize expectations. It is also unlikely that reputational considerations will be important to a government which feels that it has little chance of being re-elected. In this situation an incumbent has an ‘incentive to follow particularly shortsighted policies, since it is not concerned with a future in which it is likely to be out of office’ (Alesina, 1989). A further destabilizing influence on policy arising from political instability derives from the inability of fragile coalition

governments to carry through the tough but necessary economic policies crucial for long-run stability. Alesina (1989) finds a positive correlation between an index of political instability and Okun's misery index (inflation + unemployment) for the period 1973–86. An exception in his 20-country sample is the UK, which managed to combine relatively poor economic performance during this period despite having a high degree of political stability. In Alesina and Drazen's (1991) analysis of why necessary stabilization policies are frequently delayed, they consider a situation where two parties with different ideologies engage in a war of attrition as they each attempt to pass on the burden of fiscal reform to the other party's supporters. The resultant delay and government inaction in the reform process leads to debt accumulation and crisis before one of the parties is forced to accept a larger share of the fiscal burden. As Drazen (2000a) notes, 'the failure to adopt socially beneficial economic reforms or their adoption only after long delays is a leading example of the divergence between the simple textbook models of economic policymaking and real world experience'. Considerable cross-country evidence now exists which indicates that seigniorage (the inflation tax) is positively related to the degree of political instability. In a study of

79 developed and developing countries for the period 1971–82, Cukierman et al. (1992) found evidence in support of their hypothesis that ‘more unstable countries rely relatively more on seigniorage to finance the government budget than do stable and homogenous societies’. These conclusions are also supported by Edwards (1994), who found that the incentive to use inflationary finance is closely related to the volatility of the political system. In the extreme, hyperinflation may erupt (see Capie, 1991; Siklos, 1995; Fischer et al., 2002).

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