

## Inflation: Meaning, Measure and Effects

### INTRODUCTION

A persistent, continuous and high rate of inflation—generally, 5% or more—has emerged during the post-War II period, especially since the early 1970s, as the most intractable economic problem for both theoreticians and policy-makers all over the world. A continuous rise in the general price level over a long period of time has been the most common feature of both developed and developing economies\*. Persistent inflation is perhaps the second most serious macroeconomic problem confronting the world economy today—second only to hunger and poverty in the 'third world.' Some authors consider inflation as the "dominant economic problem" in modern times. The persistent inflation and the problems associated with inflation have claimed more attention of the economists than any other macroeconomic problem. This has led to abounding increase in the literature on inflation. In this part of the book, we are concerned with three main aspects of inflation (i) meaning, measurement and effects of inflation, (ii) theories of inflation, and (iii) the relationship between inflation and unemployment. These three aspects of inflation are discussed in this and two subsequent chapters.

### 21.1 WHAT IS INFLATION?

In a broad sense of the term, inflation means a considerable and persistent rise in the general level of prices over a long period of time. However, there is no universally acceptable definition of inflation. The definition of inflation has been, in fact, a matter of opinion. Consider some frequently quoted *early definitions* of inflation.

According to Pigou,<sup>1</sup> "Inflation exists when money income is expanding more than in proportion to increase in earning activity." To Coulborn, inflation is a situation of "too much money chasing too few goods". According to Kemmerer, "inflation is ... too much currency in relation to physical volume"

\* See Tables A21.1 and A21.2 in the Appendix to this Chapter.

1. A. C. Pigou, "Types of War Inflation," *EJ.*, December 1947, p. 409 and in his *The Veil of Money*, p.34.

of business." Crowther defined inflation as, "a state in which the value of money is falling, that is, prices are rising."<sup>2</sup> The general spirit of these definitions is to define inflation as a situation in which supply of money increases at a rate much faster than the supply of real output. The definitions of this orientation do not capture the full implications of the inflationary situation. Besides, despite being theoretically unsound, these definitions are alleged to be of little use in the formulation of anti-inflation policies.

Consider some recent definitions of inflation. According to Ackley, "Inflation is a persistent and appreciable rise in the general level or average of prices."<sup>3</sup> Harry G. Johnson defines inflation as "a sustained rise in prices."<sup>4</sup> According to Samuelson, "Inflation denotes a rise in the general level of prices<sup>5</sup>". Bronfenbrenner and Holzman<sup>6</sup> have suggested a number of alternative definitions of inflation which are mostly modified versions of the earlier definitions. Their alternative definitions make things more fuzzy rather than adding clarity to the concept of inflation.

In the current literature on the subject, however, economists seem to agree that *inflation is a situation in which there is a 'persistent' and 'appreciable' increase in the general level of prices*. The terms 'persistent' and 'appreciable' and other terms like "sustained," "considerable," "continuing," and "prolonged" used in other definitions of inflation are not precisely defined. In practice, however, the term 'persistent' implies that the price rise exhibits a secular trend over a period of time, one to two years, and does not respond to anti-inflationary policies. The term 'appreciable' is more ambiguous because it does not specify as to what rate of increase in the price level is to be considered as 'appreciable' or 'considerable'—5%, 10%, 30% per month or per annum or what? There is no specific answer to this question, nor can there be any because economic conditions, needs, absorption capacity and effects of inflation vary from country to country and from time to time. Let us look at this problem in some detail.

## What is Considerable Rate of Inflation?

The question as to what is a "considerable" rate of inflation can be answered by linking it to the desirability of inflation. *A moderate rate of inflation is considered to be desirable and acceptable* for at least three reasons: (i) a

2. M. Crowther, *An Outline of Money*, p.106.
3. Ackley, Gardner, *Macroeconomic Theory*, op. cit., p.421.
4. Harry G. Johnson, "A Survey of Theory of Inflation", *Ind. Eco. Rev.*, Vol. 6, No. 4, August, 1963, reprinted in his *Essays in Monetary Economics* (George Allen & Unwin Ltd., London, 1966), p.104.
5. Samuelson, P. A. and Nordhaus, W. A., *Economics*, 15th International Edn, 1995, p.574.
6. Martin Bronfenbrenner and Franklin D. Holzman, "A Survey of Inflation Theory," *Am. Eco. Rev.*, September 1963.

moderate rate of economic activity mobilization of investment—in economic growth evident that, de a rising trend, dynamic and plausible rate of in

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tion of wealth<sup>20</sup>; (iii) output and economic growth, and (iv) employment of labour.

### Inflation and Distribution of Income

The effect of inflation on income distribution depends on how it affects the price received and price paid. *Prices received are the same as incomes* defined crudely. For example, household incomes are received in the form of factor prices wages and salaries, rents and royalties, dividend, interest, profits and income from self-employment. Similarly, *actual prices paid represent the expenditures*. *Inflation changes the income-distribution-pattern only when it creates a divergence between total price received and total prices paid by different sections of the society*. For example, we consider only two major forms of incomes: wage incomes and profits. When wages increase proportionately to the rise in profit incomes, the income distribution remains generally unaffected. When profits rise faster than wage incomes, which is generally the case, incomes get redistributed in favour of the profit earners. Meanwhile, it may be added that if inflation is predictable and consumers are able to adjust consumption pattern and wage earners can move from low-wage jobs to high-wage jobs, then the impact of inflation on income distribution is considerably mitigated.

### **Effect of Inflation on Distribution of Wealth**

(From the view point of analysis here, assets can be classified as: (i) price variable assets, and (ii) fixed claim assets. *Price-variable assets* are those whose prices increase, or in other words, whose money value increases, during the period of inflation. Price-variable assets can be further classified as: (a) *physical assets* including land, building, automobiles, gold, jewelry, etc., and (b) *financial assets* including share and stocks. *Fixed claim assets* include bonds, term deposits with banks and companies, loans and advances, etc.) *Liabilities* are mostly of fixed claim nature like house loans, car loans, bank loans, and mortgage of property. Let us assume, for the sake of simplicity in the analysis, that fixed claim assets and fixed claim liabilities cancel out.

The effect of inflation on the distribution of wealth depends on how inflation affects the *net worth* (= assets - liabilities) of the different classes of wealth holders. The effect of inflation on the net worth depends on how inflation affects the money value of the price-variable assets. If prices of all price-variable assets increase at the rate of inflation, then there will be no change in asset portfolio and no change in wealth distribution.

<sup>20</sup> Generally, the effect of inflation on income and wealth distribution are discussed together. However, since income is a flow concept and wealth is stock concept, we will discuss them separately.

**Empirical Evidence.** It has been shown above that inflation can, theoretically, at least, affect the distribution of income and wealth under certain conditions. Let us now turn to the question whether inflation really affects income and wealth distribution. The economists have devoted a considerable effort and attention to the distributional effects of inflation. A voluminous literature<sup>21</sup> is available on the subject. Empirical studies do not produce conclusive evidence on the effect of inflation on the distribution of income and wealth. To quote Samuelson and Nordhaus,<sup>22</sup> "The summary wisdom of these studies indicates that the overall impact is highly unpredictable."

### **(i) Effects of Inflation on Different Sections of Society**

As noted above, the overall impact of inflation is unpredictable. However, inflation has certain definite and predictable effect on the incomes of some sections of society. These are briefly discussed below.

**Wage Earners.** (It is a common belief that wage earners are hurt by inflation.) Some authors consider this belief as a myth.<sup>23</sup> In fact, whether wage earners lose or gain by inflation is again a matter of labour-market conditions. In developed countries labour is, by and large, organized and labour market is competitive. According to Baumol and Blinder<sup>24</sup> the average wage typically rises more or less in step with prices. This contradicts the popular myth that wage earners are, in general, losers during the period of inflation. They have used US data to show that real wage "is not systematically eroded by inflation." They add, "The fact is that in the long-run, wages

21.

Some widely quoted works are listed here: G. L. Bach and A. Ando, "The

Redistributive Effect of Inflation," *Rev. of Eco. & Stat.*, February 1957, pp. 1-13;

S. E. Harris, *The Incidence of Inflation: Or Who gets Hurt?*, Study Paper No. 7, in

*Study of Employment, Growth, and Price Levels*, Joint Economic Committee, US

Congress 1959; A. Brunner, "Inflation and Income Distribution in the United States,"

*Rev. of Eco. & Stat.*, February 1971, pp. 37-48; E. C. Budds and D. F. Seiders, "The

Impact of Inflation on the Distribution of Income and Wealth," *Am. Eco. Rev.* May

1971, pp. 128-38; W. D. Nordhaus, "The Effect of Inflation on the Distribution of

Economic Welfare," *Jl. of Credit, Money and Banking*, February 1973, Part 2, pp. 465-

96; G. L. Bach and J. B. Stephenson, "Inflation and the Distribution of Wealth," *Rev.*

*of Eco. & Stat.*, February 1974, pp. 1-13; A. M. Maslow and J. L. Rawley, "Inflation

and Redistribution," *Canadian Jl. of Eco.*, August 1975, pp. 399-409; J. Foster, "The

Redistributive Effects of Inflation : Questions and Answers," *Scottish Jl. of Pol. Eco.*,

February 1976, pp. 73-98; H. Niida, "The Distributional Effects of the Inflationary

Process in Japan," *Rev. of Income and Wealth*, June 1978, pp. 195-219; J. J. Minark,

December 1979, pp. 377-92.

22. *Economics*, op. cit., p.581.

23. See, for example, W. J. Baumol and Alan S. Blinder, *Economics: Principles and Policy*, p.101.

24. *op. cit.*, p.100.

tend to outstrip prices as new capital equipment and innovation increase output per worker.<sup>25</sup>

The Baumol-Blinder conclusion holds for at least the organized sector in India. In the organized sector, labour is unionized. The organized labour uses its union power to get compensatory increase in their wages. The labour in the organized sector is, therefore, often adequately compensated for the loss of purchasing power due to inflation. According to the official data, the public sector employees, that is, a part of the organized sector, are more than doubly compensated. The per capita annual emoluments have increased by 1326.17 percent between 1971-72 and 1994-95, whereas the consumer price index ( $1960 = 100$ ) has gone up by only 630.21 percent during this period.<sup>25</sup> The annual emoluments in the private organized sector has increased at a faster rate. It may thus be concluded that the wage earners in the organized sector have gained during the period of inflation. This can however be hardly accepted as a universal phenomenon. For, labour market conditions and price variations vary from country to country and from time to time. The labour markets in the less developed countries, mostly faced with large scale open and disguised unemployment, are generally divided between *organized* and *unorganized* labour markets. In India, for example, the employment share of unorganized sector is much larger—nearly five times bigger—than that of the organized sector.<sup>26</sup> The wage in the unorganized labour market have not increased in proportion to the rate of inflation. Therefore, the labour in the unorganized sector is a net loser during the period of inflation.

**Producers.** Whether producers gain or lose due to inflation depends, at least theoretically, on the rates of increase in prices they receive (the sale price) and the prices they pay (input prices or the cost of production). In general, product prices rise first and faster than the cost of production. Therefore, profit margin increases and producers gain. Let us elaborate on this point.

The product prices rise first due to demand-pull factors, rise in money supply, supply bottlenecks, sudden rise in certain input prices (e.g., oil price), additional demand for inputs pushing the input prices up, though at different rates and with different time lags. As mentioned above, wages and salaries increase in the long run in step with the rate of inflation. However, it must

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be borne in mind that wages and salaries do not increase automatically and simultaneously during the period of inflation. There is always a time-lag between the rise in commodity price and wages. The producers gain during inflation due to wage-lag. Besides, other input prices increase at a lower rate. Therefore, producers are the net gainers.

**Fixed Income Class.** (The people of the fixed-income category are the net losers during the period of inflation. The reason is that their income does not increase—it remains constant—but the prices of goods and services they consume increase.) As a result, the purchasing power of their income gets eroded in proportion to the rate of inflation. For example, suppose that a person earns a fixed annual income of Rs 100,000 and that the rate of inflation is 10 percent. It means that if he spends his total income, he can buy goods and services worth only Rs 90,000 at the prices in the current year. If prices continue to increase at the rate of 10 percent per annum, his purchasing power will be reduced to Rs. 81,000 in the second year and to Rs. 72,900 in the third year, and so on.

**Borrowers and Lenders.** In general, borrowers gain and lenders lose during the period of inflation. For example, suppose a person borrows Rs 5 million at 12 percent simple rate of interest for a period of five years to buy a house. Suppose also that escalation in property prices is such that property prices double every 5 years. After 5 years, the borrower would pay a total sum of Rs 8 million whereas the price of house rises to Rs 10 million. The borrower gains by Rs 2 million. The lender loses by the same amount in the sense that had he bought the house himself, his money would have risen to Rs 10 million.

**The Government.** (The government is a net gainer during the period of inflation.) In order to analyze the government's gain from inflation, let us consider the government as a *taxing and spending unit and as a net borrower*.

(As regards the effects of taxation on tax revenue, inflation increases yields from both, the direct and indirect taxes.) Consider first the direct taxes, viz., personal and corporate income taxes.

Inflation increases tax yields from personal income tax in at least two ways. One, inflation redistributes income generally in favour of higher income groups. This kind of income transfers enlarge the tax base for the personal income tax. As a result, the yield from the personal income tax increases. Two, inflation increases the nominal income at the rate of inflation, real income remaining the same. As a consequence, an income which was non-taxable prior to inflation becomes taxable after inflation. This also enhances the tax base and, therefore, the tax revenue. In addition, with the increase in the nominal income due to inflation, incomes taxable at lower rates becomes taxable at a higher rates. This increases the yields from personal income tax.

<sup>25</sup> See *Economic Survey*, 1996-97, Government of India, Ministry of Finance, p. S-54.

<sup>26</sup> According to Planning Commission estimates (published in *Economic Survey*, 1996-97, p. S-54), the total employment in India stood at 320.5 million persons in 1994-95, of which nearly 183 million (based on 1981 ratio) were self-employed. It means, 137.5 million fell in the category of employees. Of this, only 27.4 million, i.e., about one-fifth, were employed in the organized sector including private industrial and public sector. Thus, unorganized labour market comes to nearly 5 times of the organised labour market.

As regards the *corporate income tax*, tax-yield increases during the period output prices increase of two factors. *One*, during the period of inflation total profit increases. Consequently, the yield from the corporate income tax increases. Even if output and input prices increase at the same rate, the volume of nominal profit increases. This increases the tax yield. *Two*, the yield from the corporate income tax increases due also to tax laws in respect of depreciation allowance. Firm's tax liability is determined by the allowable depreciation of the plant and equipment. In plant and equipment, depreciation is allowed on firm's book-cost of is overstated to this extent. This enhances the government's revenue from the corporate income tax.

As regards the revenue from *indirect taxes*, it depends on whether indirect taxes (customs, excise and sales tax) are imposed at fixed rate per unit of output or at *ad valorem* rate. If taxes are imposed at fixed rate, the rise in price does not affect the revenue. However, indirect taxes are generally imposed at *ad valorem* rates. The *ad valorem* rates enhance the revenue from the indirect taxes in direct proportion to the rate of inflation. In India, a major part (about three-fourths) of the central government tax revenue was contributed by indirect taxes (customs and excise) prior to the tax reforms of 1991-92; they still contribute a little over 70 percent of the total tax revenue—70.3 percent in 1996-97. The high rate of inflation during the 1970s and 1980s had contributed a great deal to the yields from the indirect taxes.

Finally, the *government is a net borrower*. We have already discussed that borrowers are net gainers during the period of inflation.

### (ii) Effect of Inflation on Economic Growth

The effect of inflation on economic growth can be examined at both theoretical and empirical levels. Let us first examine the issue of inflation and economic growth at theoretical level. *Theoretically*, the rate of economic growth depends primarily on the rate of capital formation which depends on the rate of saving and investment. Therefore, whether inflation affects economic growth positively or negatively depends on whether it affects savings and investment positively or negatively. Some economists hold the view that *inflation is conducive to economic growth and that there is positive relationship between inflation and economic growth*. Two arguments are put forward in favour this proposition.

*First*, during the period of inflation, there is a time-lag between the rise in output prices and rise in input prices, particularly the wage rate.<sup>27</sup> This time-

<sup>27</sup> For the evidence of wage-lag, see Alchian, A. A. and Kessel, R. A., "The Meaning and the Validity of Inflation Induced Lag of Wages Behind Prices," *Am. Eco. Rev.*, March 1960, pp. 43-66; T. F. Cargil, "An Empirical Investigation of Wage-Lag Hypothesis," *Am. Eco. Rev.*, December 1969, pp. 806-16.

lag between the rise in output prices and the wage rate is called wage-lag. When the wage-lag persists over a long period of time, it enhances the profit margin. The enhanced profits provide incentive and investible funds to the firms. This results in an increase in investment, production capacity and a higher level of output.<sup>28</sup>

*Second*, inflation tends to redistribute incomes in favour of higher income-groups whose incomes consist mostly of profits and non-wage incomes. This kind of inflation-induced redistribution of incomes increases total savings because upper-income classes have a *higher propensity to save*.<sup>29</sup> The increase in savings increases the supply of investible funds and lowers the rate of interest. A lower rate of interest increases investment. With increase in investment, production capacity of the economy increases. This causes an increase in the total output, which means economic growth.

Going by these arguments, the developing countries unable to mobilize adequate development finance through taxation and borrowings have been recommended inflationary financing of their growth. For example, according to Harry G. Johnson, "... some degree of inflation—but a moderate degree only—is the logical concomitant of efficient economic mobilization."<sup>30</sup> Apart from helping growth through redistribution of income, he argues, a moderate rate of inflation breaks the characteristic "rigidities and immobilities" of the underdeveloped economies and can "draw labour and resources out of traditional or subsistence sectors into the developing sectors of the economy" and can help efficient reallocation of resources.<sup>31</sup>

Empirically, historical records and empirical researches do not seem to have produced a clear evidence of positive relationship between inflation and economic growth, at least in the long run. "Looking back to the record of the eighteenth and the nineteenth centuries, some economists find a positive relationship between inflation and economic growth in various countries."<sup>31</sup> Samuelson and Nordhaus recount the US experience: "Until the 1970s, high inflation usually went hand in hand with high employment and output. Rising inflation occurred when investment was brisk and jobs were plentiful. ... But

<sup>28</sup> For the effect of wage-lag on profits, investment and economic growth, see D. Felix, "Profit Inflation and Industrial Growth," *Qly. Jl. Of Eco.*, August 1956, pp. 441-63 and E. J. Hamilton, "Prices as Factor in Business Growth," *Jl. of Eco. Hist.*, December 1952, from p.179).

<sup>29</sup> Harry G. Johnson, "Is Inflation the Inevitable Price of Rapid Development or a Retarding Factor in Economic Growth?", *Malayan Economic Review*, Vol. 11, No. 1, April 1966. Reproduced in Gerald M. Meier (ed.) *Leading Issues in Economic Development*, Sixth Edn., Oxford University Press, Delhi, 1995, pp. 179-82 (quoted from p.179).

<sup>30</sup> Harry G. Johnson, *op. cit.*, p.179.

<sup>31</sup> Edward Shapiro, *Macroeconomic Analysis*, 5th Ed. (Galgotas Publication (P) Ltd. New Delhi), p.489.

a more careful examination of the historical record has revealed an interesting fact: The positive association between output and inflation appears to be only a temporary relationship. Over the longer run, there seems to be no sustained relation between a country's inflation rate and its level or growth of output or employment.<sup>32</sup> Different kinds of relations between inflation and growth have been observed during the post-War II period: (i) low rate of inflation and high rate of growth (West Germany); (ii) high rate of inflation and high rate of growth (Japan); (iii) high rate of inflation and low rate of growth (United Kingdom),<sup>33</sup> and (iv) low rate of inflation and low rate of growth (India).<sup>34</sup>

**Conclusion.** Most economists generally agree that *a moderate rate of inflation is conducive to economic growth and that, in the short run, there is a positive relationship between moderate rate of inflation and economic growth.* In the words of Samuelson and Nordhaus, "While economists may disagree on the exact target for inflation, most agree that a predictable and stable or gently rising price level provides the best climate for healthy economic growth."<sup>35</sup> In the long run, economic growth of a country is affected by many factors and therefore, the relation between inflation and growth loses its distinctiveness. Furthermore, a very high rate of inflation, that is, galloping and hyper types of inflation, causes erosion in real savings and investment and therefore the actual savings and investment. For example, Plan investment in India has doubled in each successive Plan but the real value of investment has declined due particularly to 8-9 percent annual rate of inflation during the 1970s and 1980s. A high rate of inflation, especially, when it is unanticipated, throws investment and production plans totally out of gear. When price rise is unpredictable, people find it very difficult to determine their course of response to the price changes. This upsets the price system which causes inefficient allocation of resources and, thereby, a lower output. Dornbusch and Fisher quote evidence from Jerret and Selody<sup>36</sup> that the output growth in Canada declined by 0.3 percent for each 1 percent increase in the inflation rate.<sup>37</sup> In their opinion, "... there is no doubt that high inflation is bad for growth."<sup>38</sup>

### (iii) Effect of Inflation on Employment

Economic growth and employment go hand in hand. It may thus be construed that inflation affects employment the way it affects economic growth. If inflation affects growth variables—savings, investment and profits—favourably then it affects employment favourably too. The economists have found that the greater the rate of investment, the greater the rate of employment before the economy reaches the full employment level. However, a very strong conflict arises between growth and employment at a high rate of inflation. While a high rate of inflation increases employment, it affects growth adversely. Besides, inflation as a means to growth and employment involves severe economic and social costs in terms of distortions in relative prices, malallocation of resources, and social and political unrest. Therefore, it cannot be allowed to go uncontrolled. If it is controlled, it will limit the employment and cause unemployment. The policy-makers are therefore often faced with a situation of dilemma. If inflation is allowed to go on a high rate, it will affect growth adversely, and if it is controlled, it will affect employment adversely and there may be a high rate of unemployment. The policy-makers are therefore required to find a *trade-off between inflation and unemployment*. This issue has received a great deal of attention in recent times. This issue will therefore be discussed in detail in a subsequent chapter.

### Suggested Readings

- ACKLEY, G., *Macroeconomics : Theory and Policy*, Macmillan, New York, 1978, Ch. 15.  
 BAUMOL, W. J. and BLINDER, A. S., *Economics: Principles and Policy*, 4th Ed., Harcourt Brace Jovanovich, Publishers, New York, 1988, Ch. 6, pp. 212-213.  
 SHAPIRO, E., *Macroeconomic Analysis*, 5th Ed., 1994, Galgotia Publications, New Delhi, Ch. 21.

### Review Questions

1. Define inflation. Is any price rise inflation? What is the acceptable or desirable limit of inflation?
  2. How is inflation measured? Explain the methods of measuring inflation with examples.
  3. What are the types of inflation? How do they differ from one another?
  4. Explain and distinguish between walking, galloping and hyper inflation. What are the general features of these kinds of inflation?
  5. 'A moderate degree of inflation is the logical concomitant of efficient economic mobilization.' Explain and justify the statement.
32. P.A. Samuelson and William D. Nordhaus, *Economics*, 15th Edn., pp. 582-83.  
 33. Edward Shapiro, *op. cit.*, p.489.  
 34. The annual average rate of inflation in India during 1950-51 to 1993-94 was 6.5 per cent which is close to the desirable limits of inflation (5-6 % p.a.) for developing economies. This is therefore a low rate of inflation accompanied by a low rate of economic growth (3.5 %) during this period.  
 35. *Economics*, *op. cit.*, p.583.  
 36. Evidence reviewed in Jack Selody, "The Goal of Price Stability," Bank of Canada Technical Report No. 534, May 1960.  
 37. Rudiger Dornbusch and Stanley Fischer, *Macroeconomics*, 6th Ed., *op. cit.* p.521.  
 38. *ibid.*

where  $p$  = rate of inflation,  $m$  = percent change in money supply ( $M$ ),  $v$  = percent change in velocity of money ( $V$ ) and  $y$  = percent change in real output ( $Y$ ).

Going by the classical assumptions, the velocity of money ( $V$ ) and real output ( $T$ ) are given in the short run. The supply of money ( $M$ ) is subject to variation depending on the monetary policy of the central bank of the country. Therefore, according to the classical theory, prices rise in direct proportion to the rise in money supply. For example, if there is full employment and money supply ( $M$ ) increases by 5 percent,  $V$  and  $Y$  remaining constant, the rate of increase in the general price level will be 5 percent. The greatest shortcoming of the classical quantity theory of money is that it does not explain the process by which an increase in money supply causes the rise in the price level. Wicksell, a classical economist, however, explained the process as follows. Additional money supply flows into the economy in the form of loans and advances made by the banks to the businessmen to finance the new investment. The increase in investment demand increases the aggregate demand, especially labour. The economy being in the state of full employment, additional resources are not available at the prevailing prices. The additional resources (labour) are therefore acquired by bidding higher prices (wages) to acquire the resources (labour). This marks the beginning of the rise in the input prices (especially wages) leads to rise in the demand for consumer goods. Under the condition of full employment, the supply of consumer goods does not increase. Therefore, higher prices are bid to acquire goods. As a result, prices increase till the entire increase in aggregate demand is absorbed by the rise in prices. This is how increase in money supply causes inflation.

### The Neo-Classical Theory of Inflation

Another version of the classical theory of inflation, known as neo-classical theory of inflation, was later developed by the Cambridge economists<sup>3</sup> also known as neo-classical theory of inflation. There is, however, a difference between the two versions of inflation theory. While classical school considered increase in the supply of money as the cause of inflation, the Cambridge School postulated increase in demand for money as the cause of inflation. Recall the Cambridge version of quantity theory of money:

$$M_D = kRP$$

(where  $M_D$  = demand for money;  $R$  = real output;  $P$  = general price level; and  $k$  = the constant proportion of total income people want to hold in the form of money).

The Cambridge equation yields the price level equation as

$$P = M_D/kR.$$

This equation implies that the general price level increases in proportion to the increase in demand for money, given  $k$  and  $R$ . In case  $k$  and  $R$  are variable too, the rate of inflation depends on the difference in the rate of increase in demand for money and the sum of the rates of change in  $k$  and  $R$ .

### 22.2 THE KEYNESIAN THEORY OF INFLATION

Keynes' theory of inflation 'is only a little more than an extension and generalization' of Wicksell's view.<sup>4</sup> Keynes, however, made an important departure from the classical view. While classical economists considered an increase in money supply as the only cause of an increase in the aggregate demand and the only cause of inflation, Keynes postulated that inflation can be caused by increase in the aggregate demand. The aggregate demand might increase due to increase in real factors, for instance, increase in consumer demand due to increase in  $mPC$ , increase in investment demands due to upward shift in  $MEI$  and increase in the government expenditure. Such changes may take place even when supply of money remains constant. Increase in aggregate demand, aggregate supply remaining constant, creates a demand-supply gap which he called as "inflationary gap". According to Keynes, the inflationary gap is the cause of inflation.

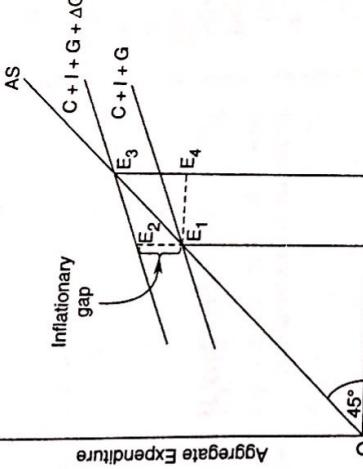
Keynes expressed his view on inflation in his book, *How to Pay for the War* (1940), wherein he gave the concept of *inflationary gap*. (*Inflationary gap is defined as the planned expenditure in excess of output available at full employment.*) The British Chancellor of Exchequer defined the inflationary gap in his budget speech of 1941 as "the amount of the government's expenditure against which there is no corresponding release of real resources of manpower or material by some other members of the community."<sup>5</sup> The inflationary gap is so called because it causes inflation, without increasing the level of output. It is important to note here that Keynes linked inflationary gap and the consequent inflation to full-employment output. It implies that *the expenditure in excess of output at less-than-full-employment level is not inflationary* even if prices increase. For, such increase in price generates additional employment and output. The additional output absorbs the excess demand ultimately without causing inflation.

The concept of inflationary gap and its impact on the price level is exemplified by using the 'Keynesian cross' in Fig. 22.1. Suppose that the economy is in full-employment equilibrium at point  $E_1$  where aggregate demand ( $C + I + G$ ) schedule intersects the aggregate supply (AS) schedule.

<sup>3</sup> A. C. Pigou, "The Value of Money", *QJL of Eco.*, Vol. 32, November 1917; Alfred Marshall, *Money, Credit and Commerce*, Macmillan, London, 1923; J. M. Keynes, *A Treatise on Monetary Reforms*, Macmillan, London, 1923; and D. H. Robertson, *Money*, Cambridge University Press, 1937.

<sup>4</sup> Gardner Ackley, *Macroeconomics: Theory and Policy*, 1978, p.427.

<sup>5</sup> Quoted in Lawrence Klein, *The Keynesian Revolution*, p.155.



**Fig. 22.1** The Inflationary Gap and Inflation

At point  $E_1$ , resources are fully employed. At the full employment level of output, the aggregate income equals the aggregate expenditure, that is,  $OY_1 = E_1 Y_1$ .

Given the full-employment status of the economy, let us suppose that the government increases its spending by  $E_1 E_2 = \Delta G$ . Consequently, the aggregate expenditure schedule shifts upward to  $C + I + G + \Delta G$ . But, since there is full employment, additional resources (capital and labour) would not be forthcoming in response to the additional demand. Therefore, higher factor prices would be offered to draw the factor inputs from their existing employment. This creates an inflationary pressure in the economy. This inflationary pressure has arisen due to  $\Delta G = E_1 E_2$ . Therefore,  $E_1 E_2$  is inflationary gap. The inflationary gap generates only money income without creating matching real output because the economy is in full employment equilibrium. The rise in money income would create multiplier effect depending on the  $m/c$ . Since the economy is in the state of full employment and additional goods and services would not be forthcoming, the multiplier would work only on the money income. The prices would therefore rise till the entire extra money income and excess demand are absorbed by the rise in the general price level.

The total rise in money income =  $\Delta G \times \text{multiplier}$

$$\begin{aligned} &= E_1 E_2 \times \text{multiplier} \\ &= Y_1 Y_2 = E_3 E_4. \end{aligned}$$

The total rise in the general price level would equal  
 $(E_3 E_4 / E_1 E_2) 100 = (Y_1 Y_2 / OY_1) 100$  percent.

This sums up the Keynesian approach to inflation.

### 22.3 THE MONETARIST VIEW ON INFLATION

The modern monetarist view is a modified version of the classical quantity theory of money. The modern monetarism is therefore sometimes called 'modern Fisherianism'. The modern monetarists,<sup>6</sup> hold that the general level of price rises only due to an increase in money supply. According to Milton Friedman, "Inflation is always and everywhere a monetary phenomenon... and can be produced only by a more rapid increase in the quantity of money than in output."<sup>7</sup> To this extent, monetarists subscribe to the classical quantity theory of money. However, the modern monetarists make the following deviations from and modifications to the classical quantity theory of money.

- (i) They do not subscribe to the classical view that there is a proportional relationship between the stock of money and the price level. In Friedman's own words, "In its most rigid and unqualified form the quantity theory asserts strict proportionality between the quantity of what is regarded as money and the level of prices. Hardly anyone has held the theory in that form."<sup>8</sup>
- (ii) The modern monetarist do not agree with classical proposition that 'the supply curve is vertical in the short run'. 'Monetarists such as Friedman argue that a reduction in the money stock does in practice first reduce the level of output, and only later have an effect on prices.'<sup>9</sup>
- (iii) Unlike the classical economists, modern monetarists distinguish between the short-run and long-run effects of change in the stock of money. They argue that, in the short run, changes in the stock of money 'can and do have important' effect on the real output. But in the long run, in their opinion, change in money stock remains neutral to the real output. "They argue that in the long run money is more or less neutral. Changes in the money stock, after they have worked their way through the economy, have no real effects and only change prices..."<sup>10</sup>

<sup>6</sup> In addition to Milton Friedman, other "Leading monetarists include the late Karl Brunner of the University of Rochester, Allan Meltzer of Carnegie-Mellon University, William Poole of Brown University, Anna Schwartz of the National Bureau of Economic Research and Hunter College, and Robert Barro of Harvard University." Quoted from Rudiger Dornbusch and Stanley Fischer, *Macroeconomics*, 6th Ed., (McGraw-Hill, Inc., NY, 1994), p.209.

<sup>7</sup> Milton Friedman, *The Counter-Revolution in Monetary Theory*, Occasional Paper No. 33, Institute of Economic Affairs, London, 1970, p.24.

<sup>8</sup> Milton Friedman, "Money: The Quantity Theory" in *The International Encyclopedia of Social Sciences*, Vol. 10 (London, Crowell Collier and Macmillan, Inc, 1968), pp. 432-447. Quoted in Rudiger Dornbusch and Stanley Fischer, *op. cit.*, p.209.

<sup>9</sup> Rudiger Dornbusch and Stanley Fischer, *op. cit.*, p.209.

<sup>10</sup> Rudiger Dornbusch and Stanley Fischer, *op. cit.*, p.210.

the interest rate decreases from  $i_2$  to  $i_1$ . The decrease in the interest rate causes an increase in investment and, thereby an increase in the level of income from  $Y_1$  to  $Y_2$ . Increase in income causes a rise in consumption expenditure. The rise in the aggregate expenditures makes the  $AD$  curve shift from  $AD_1$  to  $AD_2$  in panel (b). The shift in the  $AD$  curve is exactly proportional to the rise in the money supply.

Let us now see what happens to the price level. If aggregate supply were to rise simultaneously from  $Y_1$  to  $Y_2$ , the equilibrium point would shift from  $E_1$  to  $E_3$  and the general price level will remain stable at  $P_1$ . But the economy is in full-employment equilibrium at point  $E_1$ . Therefore, the aggregate supply is not expected to increase beyond  $Y_1$ . Under these conditions, the rise in the aggregate demand will force a rise in the general price level to the extent that can eliminate the excess aggregate demand –  $Y_1 - Y_2$ . The measure of increase in the price level is given by the point  $E_2$ , the point of intersection between the  $AS$  curve and the curve  $AD_2$ . Thus, the equilibrium point shifts from  $E_1$  to  $E_2$ . The shift in the equilibrium point from  $E_1$  to  $E_2$  shows the increase in the general price level from  $P_1$  to  $P_2$ . The rise in the general price level causes a decline in the real value of money holding. This causes a decline in the demand for money. As a result, the  $LM$  curve shifts leftward from  $LM_2$  to  $LM_1$  and money and product markets return back to the original equilibrium point  $E_1$ . Note that, since aggregate supply is inelastic, the economy adjusts to a higher level of price and interest.

As regards the empirical evidence of this kind of inflation, German inflation of 1922-23 is often cited as an example of demand-pull inflation caused by the increase in money supply. During 1922-23, the German government had fallen under heavy post-war debts and reparations payment obligations. The government, left with no option, asked its central bank to meet government payment obligations. When the German central bank printed and circulated billions and billions of paper currency, the general price level rose a billion-fold. In recent times, the excess supply of money caused demand-pull inflation in Russia in 1990s 'when the Russian government financed its budget deficit by printing roubles.' Due to rapid increase in money supply, the general level of prices had risen in Russia during the early 1990s at an average rate of '25 percent per month [or  $100 \times (1.25^{12} - 1) = 1355$  percent per year].'<sup>11</sup>

- (b) Demand-Pull Inflation due to Real Factors.** The real factors that cause demand-pull inflation are those that cause upward shifts in the  $IS$  curve. The factors that cause upward shift in the  $IS$  curve are:
- increase in government spending given the tax revenue;
  - cut in tax rates without change in the government expenditure;

- (iii) upward shift in the investment function;
- (iv) downward shift in the saving function;
- (v) upward shift in export function; and
- (vi) downward shift in the import function.

The demand-pull inflation caused by the real factors is illustrated in Fig. 22.3. Let us suppose that the monetary and real sectors are in equilibrium at point  $E_1$  in panel (a) where income level is determined at  $Y_1$  and interest rate at  $i_1$ . The equilibrium of the money and product markets implies that aggregate demand ( $AD$ ) and aggregate supply ( $AS$ ) are in equilibrium and a general price level is determined. The determination of the general price level is depicted in panel (b) at point  $E_1$ , the point of intersection between  $AD_1$  and  $AS$  schedules. The  $AD$  and  $AS$  curves are in balance at income level  $Y_1$  and price level is determined at  $P_1$ .

Given the equilibrium conditions in panels (a) and (b), let the schedule  $IS_1$  shift to  $IS_2$  due to a real demand-pull factor, say, due to increase in govern-

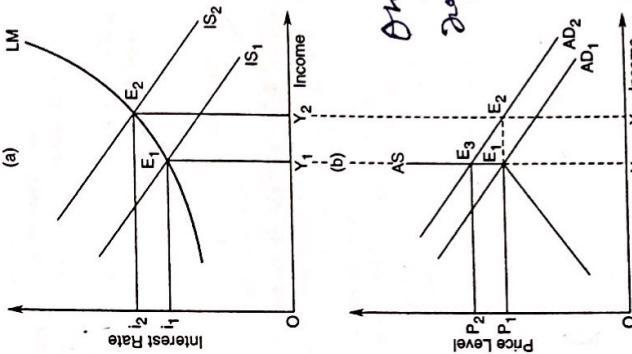


Fig. 22.3 The Demand-Pull Inflation Caused by Real Factors

11. Samuelson, P. A. and Nordhaus, W. D., *Economics*, op. cit., p. 584-85.

ment spending. When the  $IS$  schedule shifts to  $IS_2$ , the point of equilibrium between the money and the product markets shifts from point  $E_1$  to  $E_2$ . As a result, the level of income increases to  $Y_2$  and the interest rate rises to  $i_2$ . Since the interest rate has risen due to an upward shift in the  $IS$  schedule, it will stay there without affecting investment demand adversely. Since the economy is in full-employment equilibrium at  $Y_1$ , the aggregate supply is inelastic beyond this level of income, as shown by the vertical portion of the  $AS$  curve in panel (b). As a result, prices will increase by the vertical portion of the price from  $P_1$  to  $P_2$ . This is demand-pull inflation caused by the upward shift in the  $IS$  curve.

### Cost-Push Inflation

Inflation is not caused by the demand-side factors alone. There are numerous instances of inflationary movement of prices which could not be fully explained by the demand-side factors. The 1958-recession in western countries is a famous instance. During this period of recession, aggregate demand had declined. Therefore, the general price level should have decreased but it did not. In recent times, it is a common experience that prices generally do not decrease during the period of recession. Furthermore, even when there is stagnation in the economy and there is no inflationary pressure, the general price level generally continues to increase, with a high rate of unemployment. The search for explanation to this kind of phenomenon, particularly for the 1958-puzzle, has lead to the emergence of *supply-side theories of inflation*, popularly known as *cost-push theory* and *supply-shock theory of inflation*.

The **cost-push inflation** is caused by the monopoly power exercised by some monopoly groups of the society, like labour unions and firms in monopolistic and oligopolistic market setting. It has been observed that strong labour unions often succeed in forcing money wages to go up causing prices to go up. This kind of rise in price level is called *wage-push inflation*. Not only labour unions, the firms enjoying monopoly power have also been found causing rise in the general price level. The monopolistic and oligopolistic firms push their profit margin up causing a rise in the general price level. This kind of inflation is called *profit-push inflation*. Yet another kind of cost-push inflation is said to be caused by supply shocks. Thus, the cost-push inflation may be classified on the basis of supply-side factors as follows.

- (i) Wage-push Inflation
- (ii) Profit-push Inflation, and
- (iii) Supply-shock Inflation )

To these may be added some other kinds of supply-side factors, viz., *minimum-wage legislation*, and *administered prices*. The minimum-wage legislation is an intervention with the labour market. This prevents the downward

adjustment in wages during the period of recession. Administered prices, for instance, fixing a minimum price for some sections of producers (e.g., minimum procurement price of food grains in India) prevent downward adjustment in prices during the period of good harvest and keep the prices artificially high for socio-political reasons. In this section, we will discuss briefly these kinds of cost-push inflation.

**(i) Wage-Push Inflation.** Wage-push inflation is attributed to the exercise of monopoly power by labour unions to get the money wages enhanced above the competitive labour market wage rate. The logic of wage-push inflation is simple. Labour unions exercise their monopoly power and force firms, the employers, to increase their money wages above the competitive level without a matching increase in labour productivity. Increase in money wages causes an equal increase in the cost of production. The increase in cost of production causes the aggregate supply curve shift backward. A backward shift in the aggregate supply causes an upward movement in the price level.

The mechanism of wage-push inflation is illustrated in Fig. 22.4. Let us suppose that the initial aggregate demand and supply curves are give as  $AD$  and  $AS_1$ , respectively, and the economy is initially in equilibrium at point  $E_1$  in quadrant (d) of the figure. At point  $E_1$  the equilibrium level of national income is determined at  $Y_2$  and the general level of price at  $P_1$ . Given the production function in quadrant (c), the national income  $Y_2$  generates a total labour employment of  $ON_2$ . At employment  $ON_2$ , demand for labour equals supply of labour so that the labour market is in equilibrium as shown in quadrant (b). Labour market being in equilibrium, the equilibrium rate of real wage is determined at  $R_1$ . The real wage rate  $R_1$  multiplied by price  $P_1$  gives the money wage rate  $W = R_1 \times P_1$ . This is indicated by money wage rate curve  $\bar{W}_1$  in quadrant (a).

Let us now suppose that labour unions demand and get a raise in their money wage. The rise in money wage makes the money wage curve shift upward from  $\bar{W}_1$  to  $\bar{W}_2$  in quadrant (a). The rise in the money wage rate causes a rise in the real wages from  $R_1$  to  $R_2$ . The rise in the real wages causes a decline in employment from  $N_2$  to  $N_1$  in quadrant (b). The decrease in employment causes a decline in the output by  $Y_1 Y_2$  in quadrant (c). Decline in the output makes the aggregate supply curve shift from  $AS_1$  to  $AS_2$  in quadrant (d). At price  $P_1$ , the aggregate demand ( $Y_2$ ) exceeds the reduced aggregate supply ( $Y_1$ ) by  $Y_1 Y_2$ . This discrepancy between  $AD$  and  $AS$  causes prices to move upward. Prices move upward till a new equilibrium point is reached. As quadrant (d) shows, the curve  $AS_2$  intersects the aggregate demand curve  $AD$  (assumed to be given), at point  $E_2$ . Thus, the equilibrium shifts from point  $E_1$  to  $E_2$ . This shift in equilibrium shows that the aggregate income decreases from  $Y_2$  to  $Y_1$  and price level increases from  $P_1$  to  $P_2$ . This

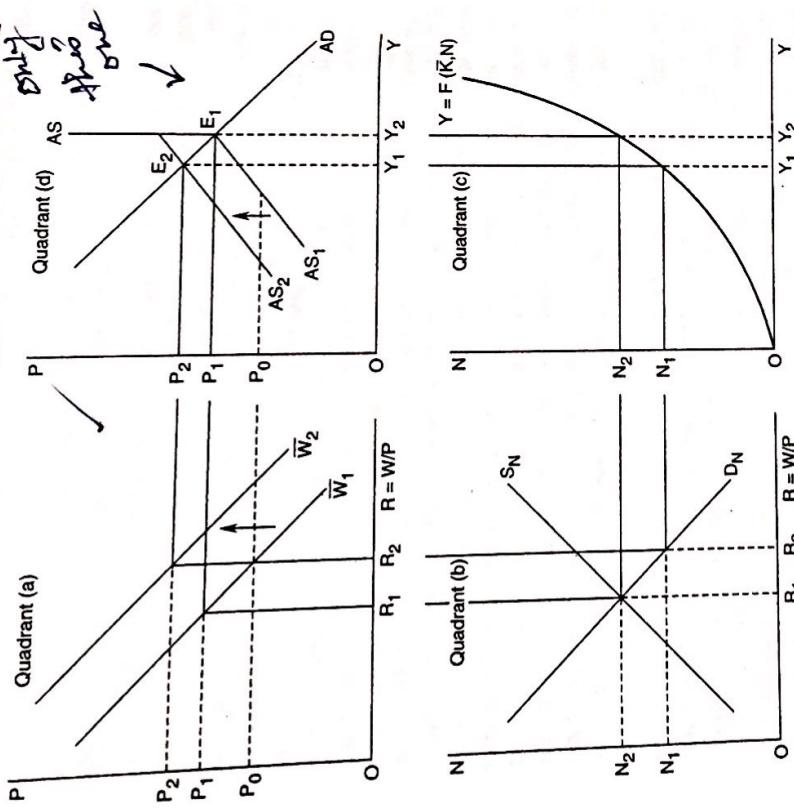


Fig. 22.4 The Wage-Push Inflation

price rise has been caused by a rise in money wages. In the final analysis, we find that a rise in the money wages causes (i) a rise in the price level, (ii) a decrease in the aggregate income, and (iii) a fall in employment.

**Every Rise in Money-wage is not Inflationary.** The foregoing analysis of relationship between the money wage rate and inflation may lead to a misleading conclusion that the rise in the money wages is always inflationary. This is however not so. The rise in money wages is not said to be inflationary under the following conditions.

**(i) Productivity linked wage-rise.** When money wages rise following an equal rise in labour productivity, it is not inflationary. Rise in money wages in excess of the rise in labour productivity may not necessarily be inflationary, for a part of rise in money wages may have been caused by an excess of demand for labour.

**(iii) Inflation-caused wage rise.** When rise in money wages follows the rise in the general price level due to upward shift in the aggregate demand curve, it is not wage-push inflation. This can be explained as follows. When the general level of price rises, it increases profits. Increasing profits create demand for additional labour. If labour demand exceeds the labour supply, producers acquire labour by bidding higher wage rates. As a result, wages go up without an increase in labour productivity. This kind of rise in money wages is the result of inflation, not the cause of inflation.

**(iii) When proportion of unionized wage is small.** It is also argued that only a small proportion of total labour force—about one-fifth—is unionized. Therefore, even if labour unions succeed in forcing their money wages up in relation to the wages of nonunion labour, it does not push up the level of the entire wage-structure. The work by H. G. Lewis on wages and inflation shows even a depressing effect of union-caused high wages on the non-union wages.<sup>12</sup> It is therefore concluded that wage rises caused by labour unions do not affect the general price level materially.

However, it is also argued that where there are strong trade unions in important sectors of the economy, the unions succeed in getting their wages hiked. The wage-hike in the unionized sector works as a pace setter for the wages in the non-union sectors. Wages in the non-union sector rise following the wage rise in the unionized sector generally for reasons as (i) employers' desire to prevent unionization of their labour force, (ii) to prevent labour discontent and give incentive to improve and maintain productivity, (iii) to retain efficient and disciplined workers, and (iv) the pressure of market environment. However, empirical evidence on wage-push inflation of this kind is not conclusive either way.

**(iv) Money-wage rise under competitive conditions.** Where wages are determined by the market forces under perfectly competitive conditions, rise in money-wage is not said to be inflationary. In a perfectly competitive market, wage increase or decrease depending on relative changes in demand for and supply of labour. In a competitive market, increase in demand may be caused by upward shift in the  $MRP$  curve. The rise in money wage under this condition is not considered inflationary.

#### The Case of Wage-push Inflation in Less Developed Countries

The wage-push type of inflation discussed above is based on the experience of and theoretical possibilities in the developed countries. The scenario in the less developed countries is substantially different. The labour unions do exist <sup>12</sup> H.G. Lewis, *Unionism and Relative Wages in the United States* (Chicago University Press, 1963). He has estimated that, during the 1950s, the unions had raised the unionized wages by 7-11 percent and reduced nonunion wages by 3-4 per cent.

hand, growth imperatives force further public investment in the infrastructural facilities, which create demand pressure and cause inflation.

**(e) Social and Political Constraints.** Social factors include social customs, traditions, beliefs, property rights and division of society by religion, caste, language, and so on. Political factors include political system and ideology (capitalism and socialism), trade unions, economic policy and role of political factors matter a great deal in economic growth of a country. For example, religion and caste-based division of society in India is at present the biggest cause of social tension and an unhealthy economic environment in the country; tax laws of the country have generated huge idle black money and prevented its investment in productive activities; corrupt administrative machinery breeds all-round inefficiency. In this system, businessmen find it easier to make large profits through hoarding and price-hike rather than through increased production. Politically sponsored trade unions find it easier to force wages up through strikes rather than through increased productivity. Such factors hold the production rate, whereas demand continues to increase due to an increase in population, unproductive expenditure by both private and the public sectors. This widens the gap between demand and supply leading to a rapid increase in the price level.

In India, inflation has been caused by an admixture of factors including 'the latent factors' built up in the early years of planning, increase in money supply, international factors, trade unions and bureaucratic hold on the economy, 'dislocation of infrastructural facilities such as power, transport and port facilities,' continued deficit financing, 'accretion of foreign exchange reserves,' droughts and floods, causing poor performance of the agricultural sector, heavy indirect taxation, administered prices, and so on.

## 22.6 MEASURES TO CONTROL INFLATION

Following the controversy on what causes inflation, there is controversy on methods to control inflation. Economists agree that inflation beyond creeping inflation is bad and can often prove disastrous, and therefore, it must be kept under control. Economists agree also that an appropriate mix of fiscal and monetary policies can be helpful in controlling inflation. But then, there is divergence of opinion on the effectiveness and primacy of fiscal and monetary policies in the policy mix. While monetarists argue that monetary measures should be given prime role in the anti-inflationary policy-mix, fiscalists argue on the contrary. Besides, even the very issue of controlling inflation poses a dilemma because controlling inflation involves the risk of accentuating the problem of unemployment<sup>22</sup>. Turning back to the issue of controlling inflation, it may be added that several other measures to control inflation have

<sup>22</sup> This issue will be discussed in the next chapter.

been devised and suggested in addition to fiscal and monetary policies. In nutshell, measures to control inflation remain a controversial issue. Nevertheless, we will discuss here, the various measures which have been suggested from time to time.

The various anti-inflation measures are generally classified as follows.

- (i) Monetary measures
- (ii) Fiscal measures
- (iii) Price and wage control, and
- (iv) Indexation

These measures and their shortcomings are discussed below.

### (i) Monetary Measures

As already mentioned, the 'monetarists' argue that inflation is anytime anywhere a monetary phenomenon: it originates in the monetary sector due to increase in money supply in excess of its optimum level. Therefore, they hold the view that control of money supply through an appropriate monetary policy is greatly effective in controlling demand-pull inflation. Monetary measures to control inflation range from demonetization to credit rationing. The monetary measures which are widely used to control inflation are divided into (a) traditional, and (b) nontraditional measures. The traditional methods of controlling inflation are discussed here in a general terms. The non-traditional measures will be discussed in the context of the Indian economy.

**A: Traditional Monetary Measures.** The traditional measures of inflation control include the following measures.

- (a) Bank rate policy,
- (b) Variable reserve ratio, and
- (c) Open market operation.

**(a) Bank Rate Policy.** Bank rate or, more appropriately, 'central bank rediscount rate,' is the rate at which central bank buys or rediscounts the eligible bills of exchange and other approved commercial papers presented by the commercial banks. The central bank performs this function as the 'lender of the last resort.' In India, where bill market is underdeveloped, the Reserve Bank of India (RBI) advances money to the commercial banks in two forms: (i) in the form of advances mostly against the government securities, and (ii) rediscounting facility for eligible usance bills and other approved securities.' In the developed money markets, the bank rate policy is used during the period of inflation as a central instrument of monetary control. The bank rate forms the basis of lending rate charged by the banks. The use of bank rate policy forms the basis of 'dear money' or 'tight money' policy and the 'cheap money policy.' When the central bank raises the bank rate, it is said

to have adopted a 'dear money policy' and vice versa. The bank rate as a measure of monetary control works in two ways.

**One**, where objective is to control inflation, the central bank raises the bank rate. This increases the cost of borrowing and, therefore, reduces banks' borrowing from the central bank. This reduces banks' ability to create credit. As a result, flow of money from the commercial banks to the public reduces. Therefore, price rise is halted to the extent it is caused by the credit money. The effectiveness of this method of monetary control is, however, severely reduced if (i) commercial banks have excess liquidity, (ii) they have alternative sources of creating reserves, (iii) they are free to reduce their lending rates even if there is increase in the bank rate, (iv) demand for commercial bank credit is low, and (v) future expectations regarding the market prospects is optimistic. In India, this method has not been effective mostly because the RBI does not allow a big difference between the bank rate and the lending rate of the bank—only 0.5 percentage point at a time.

**Two**, in a developed and fully integrated money market, the bank discount rate sets the trend for the general market rate of interest, particularly in the short-term money market. Therefore, when the bank rate is changed, other rates of interest move in the same direction. For example, if bank rate is increased with a view to controlling money supply and, thereby, inflation, banks increase their lending rates and other market rates follow the suite. In general, the cost of borrowing goes up. This slows down the monetary flows from banks to the public. This is theoretically supposed to slow down the pace of general economic activities and also the price rise.

In India, the RBI is constrained to make full use of the bank rate as an instrument of monetary control for the fear (i) it might raise the interest rate in the gilt-edged market and thereby increase government's cost of borrowing, and (ii) it might result in capital loss to the bond-holders, i.e., the financial institutions. Besides, 'the role of the bank rate as an instrument of monetary policy has been very limited in India, because of a number of factors like the administered structure of interest rates, sector specific refinancing facilities for commercial banks and underdeveloped bill market' (*Economic Survey*, 1994-95, Government of India, p. 43).

**(b) Variable Reserve Ratio.** Commercial banks keep a certain proportion of their total demand and time deposits in the form of cash reserve. A part of this reserve is maintained as 'cash in hand' for meeting their day-to-day payment requirements and a part is maintained with the central bank as 'statutory reserves.' The statutory reserve requirement called 'cash reserve ratio' (CRR) is determined and imposed by the central bank. [The CRR has been changing in India.] The central bank uses the CRR as a weapon to control money supply. With an objective to controlling inflation, the central bank raises the CRR. Increasing CRR is virtually withdrawal of money from the circulation. In effect, when central bank raises the CRR, it reduces the

lending capacity of the commercial banks. As a result, flow of money from commercial banks to the public decreases. This hails the rise in prices to the extent it is caused by the bank credits. This method of controlling inflation has the same limitations as the bank rate policy.

**(c) Open Market Operations.** Open market operation refers to sale and purchase of government securities and debts by the central bank to and from the public. This function is performed by the central bank as government's banker. [Where objective is to control inflation through monetary policy, the central bank sells the government securities to the public through the authorized commercial banks. By selling the government securities in the open market, the central bank withdraws a part of the deposits available to the banks for lending. This causes a reduction in the credit creation capacity of the commercial banks and in the flow of credit to the public. The reduction in the credit flow equals the credit-multiplier times the sales proceeds of the treasury bills.]

Open market operation is regarded an efficient instrument of monetary control in the developed countries like the USA and the UK. This method is more effective than other methods of monetary control. An additional advantage of this system is that it is flexible; it can be used any time, in any amount and can be easily reversed. In developing countries like India, open market operation has not proved very successful because (i) the treasury bill market is not adequately developed and well organized, (ii) the central bank does not have adequate resources for buying back securities, and (iii) the unintended indirect effects of open market operations, for instance, disturbing the interest rate structure, are much greater than the objective of monetary control. In India, the treasury bill market is not well developed. It is largely a 'captive market' in the sense that it is confined to the financial institutions such as scheduled commercial banks, life insurance and general insurance companies, and the government financial corporations. These institutions are required by the law to invest a certain proportion of their total liabilities in the government bonds and securities.

**B: Non-traditional Measures.** The non-traditional methods of monetary control used by the RBI are following:

- Statutory liquidity ratio,
- Selective credit controls,
- Moral suasion, and
- Credit authorization scheme.

These weapons of monetary control are discussed here briefly.

**(i) Statutory Liquidity Ratio (SLR).** The statutory liquidity ratio (SLR) is one of the non-traditional methods of monetary control used by the RBI in addition to the variable reserve ratio. The objective of SLR is to allocate

the total bank credit between the government and the business sector. The *SLR* is a double-edged weapon. On the one hand, it controls the central government borrowings from the RBI, and on the other, it restricts the freedom of the banks to sell the government securities or to borrow against them from the RBI. Under this method of monetary control, banks are required by the statute to maintain a certain minimum proportion of their daily demand and time liabilities (*DTL*) in the form of certain *designated liquid assets*. The designated liquid assets include (a) excess reserves (*ER*)—defined as total reserves less cash in hand and balances with RBI, (b) investment in unencumbered government (*IGS*) and other approved securities, and (c) current account balances with other banks (*CAOB*). Thus,

$$\text{SLR} = \frac{\text{ER} + \text{IGS} + \text{CAOB}}{\text{DTL}}$$

In fact, the main objective of the *SLR* is to ensure a certain minimum of bank credit to the government. The RBI has been changing the *SLR* from time to time. It has raised *SLR* from 20 percent in 1949 to 35 percent in 1981, to 38.5 percent in 1990-91 and reduced to 25 percent in 1994-95.

**(iii) Moral Suasion.** The central banks use moral suasion technique of persuasion and pressure in general and on the errant banks in particular to adopt a lending policy in line with the objectives of the general monetary policy. The central banks use this technique through discussions, letters, and speeches of the concerned authorities, especially when traditional methods of monetary control do not work satisfactorily for any reason. This method is used for controlling both quantity and quality of credits. The quality of credit refers generally to the sectoral distribution of credit. The RBI uses moral suasion to urge the commercial banks to keep a large proportion of their assets in the form of government securities, to help the RBI in developing a broad-based security market, and to cooperate in controlling inflation. The RBI has frequently used moral suasion for implementing its monetary policy.

**(iii) Selective Credit Controls (SCCs).** (The methods that RBI uses to regulate the distribution of bank credit between the various sectors and the industries on selective basis is called *selective credit controls*.) The RBI has generally used the *SCCs* to prevent the banks from advancing money for the purpose of speculative hoarding of essential commodities like food grains, oil seeds and agricultural raw materials. The objective is to prevent the rise in the prices of essential commodities. What the RBI does is to reduce the lending margin against the stock of essential goods. This discourages the traders to hoard the essential commodities in short supply and prevents the speculative rise in the prices.

The effectiveness of *SCCs* depends, in general, on (i) availability of non-banking finance, (ii) availability of other collaterals against which traders can borrow from the banks, and (iii) the degree of scarcity of the commodities in question. The last point needs a clarification. When a commodity is greatly in short supply, then price is high, and the speculative tendency is high. A timely action by the RBI can prevent hoarding and further increase in the price of an essential commodity.

**(iv) Credit Authorization Scheme (CAS).** The credit authorization scheme (*CAS*), introduced in 1965, is used by the RBI to allow banks to give credit to large public and private sector borrowers. Under the scheme, the commercial banks are required to seek prior authorization of the RBI and to report later to the RBI with regard to large credit facilities given to large private and public sector units. The credit facility subject to prior authorization include credit facility regarding (a) working capital, (b) term loans for capital accumulation, and (c) letter of credit and deferred payment guarantees. For credit facilities, prior authorization is not necessary but has to be reported to the RBI. The *CAS* facility includes export credit, credit for fertilizer distribution, and defense related credit.

### (ii) Fiscal Measures

A section of economists popularly known as 'Keynesians' or 'fiscalists' argue that demand-pull inflation originates in the real (product) sector due to an increase in aggregate demand in excess of aggregate supply. The excess demand may result from the increase in expenditure by the households, firms and the government. They emphasize that the excess demand arises mainly due to excessive government expenditure. Therefore, fiscal policy or the budgetary measures are a more powerful and effective weapon to control demand-pull inflation.

The choice of fiscal measures for controlling inflation depends on the cause(s) of excess demand resulting in demand-pull inflation. Where excess demand is caused by the *government expenditure* in excess of real output, the most effective measure is to cut down the public expenditure. A cut in public expenditure reduces not only the government demand for goods and services but also the private consumption expenditure through a process of reverse multiplier. Therefore, the excess demand decreases more than a given cut in public expenditure.

Where excess demand is caused by the private expenditure, that is, the expenditure by the households and firms, *taxation of incomes* is a more appropriate measure to control inflation. Taxation of incomes reduces the disposable income. Since consumer demand is a function of disposable income, consumer demand decreases due to taxation. Thus, a well designed taxation policy reduces the aggregate demand, and thereby, it brings the demand-pull inflation under control.

23. This section is largely based on S. B. Gupta, *Monetary Economics : Institutions, Theory and Policy*, 1983 (S. Chand & Co., New Delhi).

### Is Fiscal or Monetary Policy More Effective?

Economists are not unanimous on the effectiveness of fiscal and monetary policies in controlling demand-pull inflation or any kind of inflation. Monetarists argue that fiscal policy is more effective in controlling inflation, whereas monetarists argue that monetary policy is more effective. The other groups different from those of the monetarists and fiscalists hold a view control inflation.

The empirical evidence on the relative effectiveness of monetary and fiscal policies are not conclusive. Some economists, e.g., Andersen and Jordan, find that monetary policy is relatively more effective than the fiscal policy in controlling inflation and promoting employment. Some other economists (e.g., Leeuw and Kalchbrenner) find that fiscal policy is more effective than the monetary policy. Findings of Gary Fom and R Klien support the view that fiscal policy is more effective. Most researches on this issue find that fiscal policy is more effective, but they do not prove conclusively that monetary policy is not effective.

It may be concluded from this controversy that demand-pull inflation may originate in monetary sector or in the real sector. If inflation originates in the monetary sector due to excess money supply, then monetary policy should be more effective. And, if inflation originates in the real or the product sector due to a rise in the aggregate private demand and public expenditure, then fiscal policy would be more effective. *In fact, an appropriate combination of fiscal and monetary policy is more effective in controlling inflation than any of these policies.*

### (iii) Price and Wage Control

Monetary and fiscal measures work indirectly and often prove ineffective in controlling inflation. Therefore, the governments resort to direct measures to control inflation. Direct measures consist mainly of *price and wage controls*. The price and wage controls go together because price-push and cost-push inflation go hand in hand, whatever may be the cause of initial inflation. We discuss here the price control and wage control as practical measures of combating inflation.

**Price control** as a measure to control inflation is generally adopted during the war period when inflation tends to gallop. This method is adopted even during the peace period, when inflation threatens to cause serious damage to the economy in general and to the vulnerable sections of the society in particular. (When the government resorts to price control, a maximum retail price of goods and services is fixed) Price control may be general, applicable to all goods and services. The primary objective of price control is to prevent the price rise of scarce goods and to ration the use of the commodity. In order

to ensure a fair distribution of the scarce commodities, rationing system is adopted. Under the price control system, selling a commodity at a price higher than the price fixed by the authorities is declared a cognizable offence. Whether the system works effectively and efficiently is a controversial matter. It is general experience that price controls lead to black-marketing of goods and unfair distribution of scarce goods and services, especially where administrative machinery is corrupt and inefficient. It is a common experience of both developed and developing economies, that price control, is an ineffective and costly affair.

**(Wage control)** is used to combat inflation when wages tend to rise much faster than the productivity or the 'cost-of-living index' or when, in simple words, wage-push is found to have caused and perpetuated inflation. Under this method, the government controls the wage-rise directly by imposing a ceiling on the wage incomes in both private and public sectors. Often a direct and strong method, that is, a 'wage-freeze' is applied to contain inflation. In a democratic country with strong trade unions, 'wage-freeze' is more often than not a politically sensitive issue. In otherwise conditions, it is expected to affect productivity. Then the government uses a weaker method called 'jawboning', or 'moral suasion'. This method is essentially forcing moral responsibility on the trade unions for consequences of cost-push inflation and restraining labour unions from demanding higher wages. Jaw-boning and moral suasion work only for a short period, if at all, because it is one-sided in a situation of wage-price spiral. A more sensible and effective method of containing wage-push inflation is known as 'wage guideposts'. The wage guideposts' are a plan of action against inflation prepared by common consent and mutual agreement among the representatives of the government, trade unions and the businessmen, for a disciplined and controlled upward movement in the wages and prices. Under this scheme, wage and price rise are monitored by a board of the representatives of the different groups of the society. Again, simply due to its democratic nature, the system does not work for long, especially when prices continue to rise. Friedman comments, "Guideposts and pleas for voluntary compliance are a halfway [measure] whose only merit is that they can more readily be abandoned than legally imposed controls. They are not an alternative to other effective measures to stem inflation, but at most a smoke-screen to conceal lack of action."<sup>24</sup>

In reality, the wage-price control system does not work efficiently. For, if wage-hike is not allowed, skilled workers move to the industries and companies where wage structure is relatively higher. Excessive job-changing is not only inefficient but also tends to breakdown wage controls.<sup>25</sup> Also,

<sup>24</sup> Milton Friedman, "What Price Guidepost?", in Arthur M. Okun (ed), *op. cit.*, p. 211

<sup>25</sup> William Poole, "The Cost of Wage-Price Control", in Arthur M. Okun (ed), *The Battle Against Unemployment*, 1972, p.14.

restriction on job-changing affects productivity and a fall in, productivity enhances the cost of production. This makes the system breakdown.

#### (iv) Indexation

As noted above, inflation is an intractable problem. Besides, controlling inflation is also fraught with the danger of aggravating unemployment problem. However, an uncontrolled inflation affects different sections of the society in different ways. While some categories of people gain from inflation, some sections lose heavily. Inflation also causes inequitable distribution of incomes. Economists argue that if inflation cannot be or should not be controlled, its adverse effects on different groups of the society should be minimized. They suggest indexation of prices, wages and contractual obligations with a view to compensating those who lose their real incomes due to inflation. According to Samuelson and Nordhaus, "Indexing is a mechanism by which wages, prices, and contracts are partially or wholly compensated for changes in the general price level."<sup>26</sup> Thus, indexation is not a method of controlling inflation. It is a method of adjusting monetary incomes so as to minimize the undue gains and losses in real incomes of the different sections of the society due to inflation. It helps contain social dissension and discontent and, therefore, makes inflation easier to live with.

In spite of strong recommendation by the economists to index wages, debts, taxes, and all other long-term contractual payments, the governments have doubted the feasibility and effectiveness of indexation for three reasons.<sup>27</sup> *One*, adjustment in indexation is very difficult in case of recurrent supply shocks of great amplitude. *Two*, the economy is an extremely complex system with interlinked and inter-related prices. Therefore, a reasonable indexing of all prices to the satisfaction of all concerned is an extremely difficult task. *Three*, the government find it politically impracticable because it does not control inflation, it rather creates a base for its perpetuation.

#### Suggested Readings

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<sup>26</sup> Samuelson, P. A., *Economics*, 15th Edn., p.596.

<sup>27</sup> Rudigar Dornbusch and Stanley Fischer, *op. cit.*, p.525.

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#### Review Questions

1. Describe the classical theory of inflation. Does this theory explain fully the phenomenon of inflation?
2. What is monetarists' approach to the phenomenon of inflation? Is inflation always and every where a monetary affair?
3. What is meant by 'inflationary gap'? How does the concept of inflationary gap explain a continuous and persistent increase in the general price level?
4. "Inflation is always and everywhere a monetary phenomenon ... and can be produced only by a more rapid increase in the quantity of money than in output." Who said it? Do you agree with this statement? Give reasons for your answer.
5. What are factors behind the demand-pull inflation? Explain with the help of appropriate diagrams. What are the major weaknesses of the demand-pull theory of inflation?
6. What is cost-push inflation? What factors contribute to the cost-push inflation?
7. Distinguish between demand-pull and cost-push inflation. Can the two types of inflation go hand-in-hand? Explain in this regard the 'wage price spiral'.
8. In the opinion of an economist, "the distinction between demand-pull and cost-push inflation is unworkable, irrelevant or even meaningless." Who is the economist? Do you agree with this statement? Why?
9. Some economists (Myrdal and Streeten) argue against straightaway application of inflation theories developed in the background of developed countries to the less developed countries. Do you agree with this proposition? If not, why?
10. Can demand-pull and cost-push theories of inflation be straightaway applied to explain the phenomenon of inflation in the less developed countries? Give reasons for your answer.
11. What is the structuralist view on inflation? Explain the structural bottlenecks that are supposed to cause inflation in the developing countries.
12. Combating inflation has been one of the most intractable economic problem faced by the developed and underdeveloped countries. Comment.