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SOME SUMMARY THEORIES OF INFLATION CAUSATION

A THESIS
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BY
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SOME SUMMARY THEORIES OF INFLATION CAUSATION

A THESIS

APPROVED FOR THE DEPARTMENT OF ECONOMICS

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SOME SUMMARY THEORIES OF INFLATION CAUSATION

CHAPTER I

Introduction

In Chapter I the author will attempt to expose to the reader several definitions of inflation. It is intended to reveal that there exists great difficulty in establishing an agreed-upon statement concerning such a definition. This chapter will be concerned with presenting some of the definitions which have occurred most often in the economic literature. From here the writer will attempt to present a brief historical sketch of the inflation problem, the obvious purpose of which is to shed some light on the contemporary problems of inflation. One question which will be treated is whether inflationary pressure gets its origin from the demand area, from the supply area, or perhaps from some combination of these two notions, the latter of which has been popularized as secular demand shift.

The Difficulties of Defining Inflation

A survey of economic literature leads to a certain amount of definitional confusion. This confusion is created by the fact that many words and expressions are not always used in reference to the same notions or represent the same state of conditions. Also, quite often economists tend to put an emotional inflection on the use of a particular word or phrase. It, therefore, becomes quite obvious that these implications have a significant influence on the difficulty of defining inflation. A case in point which tends to clarify our position is the answer often given by Professor
C. E. M. Joad. Joad seems to justify any question that asks for a definitive definition of inflation by saying, "It all depends on what you mean by ..."\(^1\)

Quite often the definition which one encounters is one describing inflation as a rise in the general price level. As may be observed, this is a rather simple definition and is plagued by difficulty when put into practice. One of the difficulties of identifying price rises as being inflationary is that some price increases may not be inflationary at all.\(^2\) This definition raises the question of whether a restoring of prices on the upswing of the business cycle should be considered inflationary. If, for example, the decline in the price level was created by a strong depression, then this restoring to the previous price level could very easily be a return to the status quo. In addition, Harry Johnson points out that a price increase may be merely the accepted functioning of the competitive system. For example, a crop failure will create a price increase which will ration the smaller supply of crops. According to Johnson, this should not be considered inflationary because in all probability it will be self-limiting and will not create serious policy problems.\(^3\)

However, if we accept the above, it should be noted that there exist some levels of price increase which should be considered inflationary and others as non-inflationary. Since there is a multiplicity of price levels, which tend to show various rates of change, one cannot make reference to the presence or absence of inflation without some reference to the price


index used in drawing his conclusion. This, however, is not just a contemporary problem, but has a long history in the determination of the "value of money" in monetary economics. The economics literature tends to express the general price level as an average price of some type, which creates the source of what may be called the index number problem. With respect to the general price level, the problem tends to be complicated in that the general price level is a reflection of many price actions. This complication poses the question of how these various price actions should be summed up.

Since it is generally an accepted fact that all prices are not of equal importance, it can be observed that the general price level is best expressed as a weighted average. Thus the movement of the individual price influences the movement of the whole in proportion to the importance assigned to it. It must be pointed out that various weights will express different views on how much the general price level has fluctuated in a given period of time. Moreover, the various methods of weighting may have very little influence on the broad qualitative conclusions.

The statistical evidence of advanced industrial economies includes many varieties of price indexes such as the wholesale price index, consumer price index, cost of living price index, and implicit price deflators for various components of national expenditures as indexes of price movement. These various price indexes can quite easily express different rates of movement, which can distort the true picture. For example, in a normally growing economy a price index which incorporates the price of services would tend to reflect some inflation. This may occur even though the consumer prices tend to be relatively stable, the reason being that the cost of labor tends to increase as the price of commodities rises. The consumer price

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index is heavily loaded with services. For example, from 1948 to November 1959 the price of services rose 47 per cent, while the commodity factors rose only 14 per cent.\(^5\) For this reason, some economists have argued that it is the wholesale price index which will create greater ability in sensing changes in the economic conditions.

The difficulties encountered with the general price indexes have been a significant factor in contributing to the use of the implicit price deflators. The implicit price deflators of many components of national expenditures are computed by obtaining the value of the quantities involved in a component in a stated year by the base year set of prices, and then dividing this amount of expenditures at "constant prices" into the present value of the amount of output. Thus through this method we may obtain implicit price deflators for gross national product, national income, for aggregate consumption, and so on.\(^6\) It is generally argued by most economists that the implicit price deflator for national income or gross national product comes closest to representing a general price level index for the entire economy.\(^7\)

The methods of computing index numbers in general may breed a certain degree of bias in an upward direction. These areas of bias may in periods of mild inflation create difficulty in determining the presence of inflation and its severity. Price indexes fail to take into consideration the improvements in the quality of goods, nor do they reflect the behavior patterns of prices of new goods. A very important factor in economic growth involves the gradual enhancement of the technical quality of established goods. The


\(^6\) Ball, *op. cit.*, p. 18.

result is that these goods yield a higher level of service and satisfaction than in a previous period. The introduction of new products is a very real part of the growth process. Generally speaking, new products which demand high prices when they are first offered in the market will experience a price decline as they become mass-produced. Generally speaking, the price indexes fail to correct the stated prices adequately for improved product quality, nor do they become involved in new products until they are being mass-produced, thus failing to show the initial phase of declining prices. Therefore, the price indexes could very easily give an upward bias to the price level and create the impression of inflation, when in fact this may not be the case at all.

Another problem encountered with measuring variations of the price level is the question of whether or not to observe prices inclusive or exclusive of taxes. One area of difficulty is a situation in which the government may impose a tax increase on commodities in order to reduce inflationary pressure, when in fact this will tend to force up prices inclusive of taxes. This will give the impression of inflation if prices inclusive of taxes are used as a means to measure inflationary pressure.

As was pointed out earlier on page 2, not all price increases are considered to be inflationary. It can be observed that inflation is further complicated by the notion that inflationary pressure may be present without

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9Johnson, loc. cit., p. 105.

10Kendrick, op. cit., p. 260.

11Johnson, op. cit., p. 105.
price increases. The strong economic forces of the economy which could perpetuate a price rise are being controlled in part by the federal government. Such a situation should not be regarded as being inevitably inflationary--there is always an arbitrary factor involved in determining whether the given situation is inflationary or not with the absence of price increases. However, with a given state of affairs, if prices are not increasing because of some artificial means of control enacted, the economy is said to be experiencing repressed inflation.\(^\text{12}\) This problem then poses the question that when these price controls are in effect should the price indexes be based on the "black market" in addition to the official prices.\(^\text{13}\)

Another possible definitional problem of inflation relates to the considerations given to the time dimension. For example, a sustained increase of 2 per cent in the gross national product deflator on a quarterly basis would amount to an 8 per cent increase for the year. This 8 per cent increase might be generally regarded as inflationary. If, however, the 2 per cent increase were reversed in the second quarter, then how could one consider the first quarter as inflationary? This raises the question if any increase should be prolonged before it can be identified as being inflationary. Thus this raises the additional question of the time dimension to be established as a means of measuring the presence of inflationary pressure.\(^\text{14}\)

These are generally some of the problems encountered by economists in attempting to define inflation within the framework of price movements. However, there are other definitions of inflation which tend to make observations dealing with the causes of inflation and do not confine themselves to the description of inflation. Quite often one finds that inflation is

\(^{12}\text{Ball, loc. cit., p. 14.}\n
\(^{13}\text{Bronfenbrenner and Holzman, loc. cit., p. 598.}\n
\(^{14}\text{Shapiro, loc. cit., p. 497.}\)
defined as an increase in the quantity of money which is larger than the increase in the real national output. In addition, the notion of governmental deficits are often made in reference as a cause of inflation. Also one is referred to the definition of inflation as a state of condition where there exists an excess of demand for goods and services. These definitions tend to call attention to the causes of inflation and to create the impression that conditions may exist which would create inflationary pressure in the absence of a price-rise definition of inflation.15

Scholarly Attempts at Defining Inflation

A more descriptive analysis of various definitions of inflation follow. An attempt will be made to expose the reader to some of the various scholarly attempts at defining inflation. It is the author's purpose to shed some light on the problem of establishing an agreed-upon definition, through observing these scholarly attempts. The reader will note that the discussed definitions will be confined to those observations by J. I. Craig, M. Kalecki, Martin Bronfenbrenner, and Franklyn D. Holzman. The author feels that these observations are representative of the vast amount of literature compiled in the area under consideration.

According to Professor J. I. Craig, inflation has a Latin derivation from the verb *inflare*, to blow up. The participle of inflare is *inflatum*, which means blown up. However, in the English language, during the Nineteenth Century, the word tended to change its meaning to that of an expansion through artificial means of unnecessary proportions. The notion of artificial and unnecessary has become so strongly fused in the word that it has established an inherent position within the definition of the word. Craig exposes the valid point that a writer has the perfect right to create and use his own

definition of the word. This position can be supported as long as the writer in question makes clear his definition of the word and remains within the framework of this definition through his dissertation. This position established, the writer must obviously not attempt to draw conclusions from outside this definitional framework.\textsuperscript{16}

Professor Harvey Rogers and Lester Chandler aver that the word did not come into generally accepted use until after World War I. Rogers and Chandler further say that the definition given by the economist is greatly influenced by his beliefs or treatment of the money-credit-price mechanism. For example, there are economists who endorse a definition of inflation based on the expansion and contraction of the currency only; while others may view credit movement as a foundation for defining inflation. Still others may combine the above approaches with a price movement of a general or disruptive nature as a basis for defining the word. Rogers and Chandler go on to aver that the most agreed-upon definition, within this framework, appears to be one defined within the realm of an over-issuing of money. This, however, necessitates the establishment of some standard upon which one could measure an over-issuing of money.\textsuperscript{17}

According to M. E. Robinson, the creating of inconvertible notes and the issuing of treasury bills will enlarge the supply of purchasing power, which he believes will most likely influence the inflating of prices. He therefore maintains from this position that any governmental program designed to increase purchasing power will be a contributory factor to the inflating of prices.\textsuperscript{18}

\textsuperscript{16}J. I. Craig, \textit{loc. cit.}, p. 36.

\textsuperscript{17}\textit{Ibid.}, p. 37.

\textsuperscript{18}\textit{Ibid.}
The notion of supply factors of the volume of goods is expressed by Findlay Shirras. Shirras recognizes the influence of credit, in respect to the trade needs, on inflation. However, he averred that the government and the banks, through their credit operations, increase the quantity of currency, and if this increase is relatively greater than the increase in the volume of goods, inflation will result.\(^{19}\)

According to Craig, Hartley Withers expressed the important idea that a decline in production of goods, with a constant supply of money, would bring about an increase in the price level. Thus this decline could lay the foundation for inflationary pressure.\(^{20}\)

John Maynard Keynes discusses two types of inflation, *viz.*, "semi-inflation" and "true inflation." Keynes proposes that a continuous increase in the effective aggregate demand in relation to terms of money will probably cause a less than continuous increase in the wage unit. Keynes defines "true inflation" as a state of full employment in which (regardless of the marginal propensity to consume) any attempt to increase investments will generate pressure for money prices to increase without restriction. Keynes contends that increasing prices will be identified with rising aggregate income beyond full employment. Keynes also establishes a further position for "true inflation" when he states that the rise in the quantity of effective aggregate demand produces no further increase in aggregate income, but spends itself on cost-unit increases, which are proportionate to the rise in effective aggregate demand.\(^{21}\)

\(^{19}\)Ibid., p. 38.

\(^{20}\)Ibid., p. 39.

\(^{21}\)Ibid.
Craig draws the conclusion that the vast majority of definitions of inflation revolve around the notion of implying an over-issue of currency or credit. This point brings to the forefront some type of normative statement concerning the characteristics of the standard of measure. Craig attempts to define inflation within the framework which avoids a normative statement. Therefore, he defines inflation as:

... an economic process in which the increase of monetary instruments is proportionally greater than the corresponding increase of economic goods.

The economic process which Craig refers to is the process in which the growth of goods is less, proportionally, than the growth of the money supply. Based upon this notion, he attempts to avoid any normative interpretation. He feels that any subdivisions should be confined to the cause of inflation, such as inflation caused by budget deficits.

Kalecki's observations concerning the definition of inflation are concentrated on analyzing the validity of trying to identify the cause of inflation with its definition. Kalecki states, as many other economists have pointed out, that there appears to be no accepted definition of inflation and no agreed-upon means to measure inflation.

Some economists, as previously mentioned, have attempted to draw conclusions relating inflation with large budget deficits. However, with a sufficient resource base, a labor force not fully employed, and unutilized plant production capacity, a large budget deficit may actually move us toward full employment of our scarce resource. This movement toward full employment will not be accompanied by inflationary pressure, but may merely result in

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increased employment and output. Thus, one may conclude that the broad identification of inflation with budget deficits may very well be inadequate. In fact, Kalecki maintains that a case may very easily be built to show a balanced budget contributing to inflation. Suppose that a budget deficit disappears through an increase in the income taxes paid by higher income groups. But, as a result of the increase in taxes, there may not be a restriction in consumption by the amount of decline in income. This may be brought about by a supplementing of loss of income through a reduction in savings. Thus the state of demand and supply of goods has remained virtually unaffected; therefore, if inflationary pressure was present beforehand, it will also be unaffected by the balanced budget. 24

Attempts have also been made at defining inflation in relation to the magnitude by which the budget deficit exceeds the existing saving. 25 Budget deficits generally generate just the necessary amount of savings to finance the given budget deficit. Consider a given increase in government expenditures, d, resulting without an increase in the tax rate and an increase in consumption expenditure, c, with investment expenditures held constant. The total value of present production and present income is then raised by d + c. d + c = income, and may be expressed as d + c = y (income). Remembering that private consumption has increased by c, and that the excess of income over consumption represents savings, it may be concluded that the amount of savings corresponds to the deficit (d). Thus the deficit must generate the proper amount of savings to finance itself. 26

24 Ibid.


Based on this idea that a deficit will generate a corresponding equal quantity of savings to finance itself, the theory in question has tried to differentiate between "genuine" and "non-genuine" savings. It can be observed that when a deficit is financed by means of long-term securities, it is said to be supported by "genuine" savings. If the budget deficits are financed by means of "credit creation" and not "genuine" savings, the government's borrowing policy is held responsible for the evils of inflation. This notion could occur through the selling of treasury bills to the banks with a respective amount of deposits accumulating. This accumulation of bank deposits, relating to the accumulation of treasury bills, represents an increase of the claims of the public against the government. This represents just as true savings as the accumulation of long-term securities because both notions bring about an increase in the holdings of individuals and institutions.²⁷

In addition, it should be noted that savings may very well be invested in deposits because larger quantities are needed as cash balances for transactions, or because it may appear more advantageous to hold reserves in this form that in the form of bonds. It should be noted that current accounts experiencing accumulating deposits are not subject for spending on consumption because they may be involved in settling transactions. In addition, there appears to be very little difference between deposit account accumulations and investment in long-term securities. Thus one may attempt to conclude, as did Kalecki, that the means of financing budget deficits cannot be considered the major source of inflation.²⁸

²⁷Kalecki, op. cit., p. 160.
²⁸Ibid., pp. 160-161.
A situation in which the increase in effective demand for goods is not met by a sufficient supply has often been called inflationary. This notion maintains in a rough, vague way that a rise in the general price level will generate inflation. As can be pointed out, there are many situations in which higher price levels may not be inflationary. An increase in the price level after an increase in the wage rate or devaluation of currency will not precipitate the type of self-creating spiral process which is often defined as inflation.

It may be found that defining inflation in terms of a growing demand, which is not met by a proportionate increase in the supply due to scarcity factors, may still be rejected on the notion of being too general. This premise fails to establish a means upon which to measure inflation. An increase in the price level may result quite possibly, as noted above, from a scarcity of factors of production, but, in addition, from a rise in the wage levels. Thus the price level movement may not be considered a proper measure of the presence of inflation.

Economists have continued to base their treatment of inflation terms on many factors. They continuously expand on the various terms to explain inflation as "latent inflation" and "repressed inflation." It can quite obviously be presented that a decline in the stocks of existing inventories may very well act as a retarding agent on inflation. If the economy is confronted with an increase demand for a commodity in which the supply of its factors are in an inadequate state, it may not experience price increases due to supplements from out of stocks. This may be considered a temporary solution which is sometimes called "latent inflation." This may very well


be measured by the amount in which the stocks are exhausted over a given period of time.\textsuperscript{31}

If the stocks of commodity inventories are exhausted, as a result of no rationing, but prices are prevented from increasing by means of artificial controls, such a situation cannot be considered inflation proper (assuming that inflation is diagnosed as a rise in prices) because the economy may not experience price increases.\textsuperscript{32} The notion of bidding for prices often continues in the form of illegal additions to the price ceilings. Most economists have agreed upon calling this repressed inflation.\textsuperscript{33}

It appears that the possible gleaning of a protocol statement concerning the definition of inflation could come from a definition which would involve a mixture of these various scholarly attempts, plus the inclusion of contemporary observation dealing with inflation. This definition would obviously include treatment of the notion of excess demand in output and factor markets and cost push in the factor market. One of the most complete definitions of inflation is that which was derived by Turvey. In this definition inflation is described as a resultant factor of competition in an effort to maintain total real income, total real expenditures, and/or total output at a position which is physically impossible or trying to increase any or all of them to a position which is a physical impossibility.\textsuperscript{34} The writer feels that this definition approximates a protocol statement of most of the scholarly works surveyed, but will avoid making a definitive choice among the maze of possible definitions.

\textsuperscript{31}Ibid., p. 163.
\textsuperscript{32}Ibid.
\textsuperscript{33}Ball, \textit{loc. cit.}, p. 14.
\textsuperscript{34}J. D. Pitchford, \textit{A Study of Cost and Demand Inflation} (Amsterdam: North-Holland Publishing Company, 1963), p. 3.
Brief Historical Sketch of the Inflation Problem

As pointed out earlier, the economist must be aware of the various past treatments of inflation. It is these previous beliefs and observations which have greatly influenced the present-day thinking concerning inflation and its causes. It is generally agreed that public opinion was greatly influenced in establishing a critical view of inflation during World War I and immediately after the war in continental European countries. Probably one of the more significant factors that had great influence was the German hyperinflation in the early 1920's. These events helped to establish a foundation upon which popular and professional thought formed some basic concepts of inflation. However, these concepts may not always be true. 35

The United States and the United Kingdom both followed inflationary policies in their efforts to finance the war. These policies led to price increase, wage increases, and an ultimate increase in interest rates. 36 This inflationary pressure quickly adopted the characteristics of a wage-price spiral, which is created through wages rising because of price increases and prices rising because of wage increases in a continuous circle of movements upward. 37 One of the major outgrowths of this notion was the lag effect of wages behind prices. As a result of this, the notion arose that the recipients of profit incomes would benefit from inflation at the expense of working force's loss of real income. This treatment of the inflation sequence has gained paramount importance from that era to the present. It can be observed on a more detailed basis that the lag between wages and

37 Moulton, op. cit., pp. 104-105.
prices will not be detected during an inflationary period. Thus we have the possible effect of a shift in the distribution of income away from the wage earning factors.

As has been pointed out in scholarly attempts to define inflation, budget deficits have been confused as one of the prime causes of inflation. In addition, the notion of printing more money as a means to finance government expenditures was ultimately considered to be inflationary. Also, the German hyperinflation was a prime factor in influencing the belief that inflation would result in the redistribution of income against the rental class, those living on interest and the rent of property, and would damage those of the middle class who live on salaries and other means of fixed income. 38

The quantity theory approach to monetary difficulties received reinforcement as a result of World War I. 39 This increased emphasis on the quantity theory of money can be observed through the development of the purchasing power parity theory of exchange rates. 40

The experience of World War I had a strong overlapping influence on the policy implementation during the 1930's. Professional economists and politicians were reluctant to make intelligent policy decisions as a means to overcome the depression. The experiencing of a rapid eruption of inflation after a long period of stable money value had a strong emotional effect on the greatment of the causes of inflation. Thus the fear of budget deficits and monetary expansion as means of creating inflation were some obstacles to the implementing of proper tools for recovery. 41 For example, the notion

39 Moulton, op. cit., p. 235.
40 Johnson, op. cit., p. 110.
of an easy money policy was adopted only after considerable debate, because of the possibility that it would be helpful in balancing the budget through a reduction of the interest rates on the debt inherited from World War I. Thus these barriers to intelligent policy making in an economy suffering from severe deflation rather than inflation laid the foundation for the "Keynesian Revolution."\(^{42}\)

The experiences of the financing of World War I and the Keynesian Revolution played a significant role in the methods and policies of financing World War II. The method of financing World War II was one in which heavy emphasis was given to physical controls, such as rationing and on price and wage controls. These price and wage controls were used as a means to prevent the bidding up of prices, thus acting as a means of obtaining control over the real resources that the government needed. However, on the financial side, reliance was given to the notion of deficit financing as a means to meet the requirements which were not satisfied through taxation. Thus interest rates were kept steady through a combined use of an easy money policy and a mechanism to issue government debt more or less on demand. The notion of physical controls became the central axiom of the war financing program, in that they would act as a means to prevent easy money policy from fostering an inflationary bidding up of prices while concentrating its efforts toward the depressing of interest rates. It was believed that the retarding of a rising interest rate would make the subscription to issues of governmental debt more advantageous. Through the stabilization of the rates, the notion of uncertainty was removed, which had been an influential factor in the difficulties of the 1930's. As a result, the downward trend facilitated the selling of government debt, mainly because expectations worked in the

\(^{42}\)Johnson, \textit{op. cit.}, p. 111.
opposite direction of their World War I course. Thus the Keynesian contribution to war financing was to establish a mechanism in which total production could be forecast with the treatment given to the future demand on it. The differences between these two factors could be used as a means to expose the amount by which the prospective demand exceeded supply. From this forecast, methods and policies could be derived to reduce the excess demand.\(^{43}\)

The historical perspective shows that inflation was prevented from reaching unhealthy levels during the war period. Naturally one of the contributing factors was the method adopted in financing the war effort. The prevention of inflation during these years had some very significant influences on the post-war years. The difficulties which occurred were brought about to some extent by the continued implementation of an easy money policy after the war's completion. This notion was based on the assumption that a continuance of the wartime policy would prevent drastic recession after the war. Thus the easy money policy would enable the public sector to maintain the post-war expenditure level.\(^{44}\) The historical evidence shows that most wars are followed by periods of inflation and not periods of recession. World War II was no exception to this notion.\(^{45}\) As a result of public support of the war effort and a reduction of consumption of consumer goods, there resulted a piling up of liquid assets. Coupled with this and the continuation of an easy money policy, there was laid the foundation for what may be called demand-pull inflation.\(^{46}\)

\(^{43}\text{Ibid., p. 112.}\)

\(^{44}\text{Ibid.}\)


As a result of the post-war inflation, economists turned their attention to an analysis of inflation, which was founded on the Keynesian model of income determination. These models were based on the simple saving and investment type of Keynesian analytical system. They operated on the assumption that demand could be financed; and they observed determinants of demand other than the quantity of money rate of interest or the availability of funds.47

This post-war inflationary pressure continued on into the middle and later 1950's. The unemployment figures for the United States rose to a level which was quite a bit higher than the immediate post-war period. The unusual factor that occurred during this period was that, despite the high unemployment figures, prices continued to rise. This situation precipitated an increased interest in the problem of inflation. Debate began to spring up over the possible causes of inflation and the proper use of monetary restrictions to fight inflation. These debates developed into two schools of thought concerning the contemporary causes of inflation.48

One school of thought, which was an outgrowth of these debates, was called the "cost-push school of thought." This school of thought maintains that price increases were being generated by means of wage increase pressures from trade union bargaining power or the result of administrative action of oligopolistic firms with market power on the price level.49

The other school of thought that developed, also through these debates, was called the "demand-pull school of thought." This school maintained that

47Johnson, loc. cit., p. 113.
48Ibid., p. 114.
49Perlman, loc. cit., pp. x-xii.
the source of inflation was an excess of demand which resulted in an upward movement of price levels.⁵⁰

A third school in recent years was created as a synthesis of the cost-push school and the demand-pull school. This school has been identified with Charles Schultze as the "demand shift" theory of inflation.⁵¹ This school of thought bases its premise on the notion that neither wages nor prices are moving upward without economic reason. In addition, the forces of excess demand were not the sole factor responsible for the upward movement. But in a growing economy, demand will shift from one sector to another, and the price will increase in the sector to which the demand has shifted. However, the price will not decline as readily in the sector from which the demand has shifted. Thus there appears a general process of an upward movement of price levels which is neither caused by cost-push nor demand-pull forces.⁵²

⁵⁰Ibid., pp. ix-x.
⁵¹Samuelson and Solow, loc. cit., p. 115.
CHAPTER II

Demand-Pull Inflation

Demand-pull inflation theory emphasizes the movement of the price level due to an excess of aggregate demand over aggregate supply. Quite often the expression of "too much money chasing too few goods" is used as a general explanation of demand-pull inflation. This explanation received an extremely large amount of support when prices increased during a period of full employment and shortages of goods and output bottlenecks occurred. These conditions were experienced during World War II and the Korean War.53 A complete explanation of the definitions of demand-pull inflation theory can be observed through a graphical explanation.

Figure 1

CHANGES IN AGGREGATE DEMAND FUNCTION AND DEMAND-PULL INFLATION

The demand-pull theorist expresses an increase in the aggregate demand schedule as an upward movement from $D_1$ to $D_5$. At some given output, $O_3$, the aggregate supply schedule becomes inelastic. Thus any further increase in the demand schedule will merely lead to price increases rather than increases in output. This situation occurs in the above diagram at the point where any further increase in the demand schedule past $D_3$ will lead to price increase without an increase in output. The inelastic slope of the supply schedule establishes what may be called an output ceiling.\(^{54}\) This notion was referred to by J. M. Keynes as "true inflation" in the *General Theory*.\(^{55}\) However, more recent economists have attempted to identify the area from $D_1$ to $D_3$ as a bottleneck type of inflation, because of its origins, such as shortages and its rising marginal costs as full employment output is reached.\(^{56}\) However, this does not change the pure demand-pull theorist's idea that a given supply schedule and shifting demand schedule will create inflationary pressure on price levels.

Generally speaking, there have developed two basic approaches to the treatment for the cause of demand-pull inflation. One of these approaches emphasizes the idea that the quantity of money is the determinant of the aggregate demand schedule. The other approach, generally viewed as the Keynesian approach, maintains that the money supply is not the sole determinant of the aggregate demand schedule, but that there are various factors which would influence the aggregate demand schedule.\(^{57}\) The author will

\(^{54}\)Bronfenbrenner and Holzman, *loc. cit.*, p. 595.


attempt to shed some light on the two approaches and their explanation of the causes of demand-pull inflation.

Quantity Theory of Money

The Neoclassical economists concentrated on the notion of the quantity theory of money, which was identified as the theory of the price level or aggregate demand. Thus most pre-Keynesian economists proposed the thesis that if the money supply fluctuates at a stable rate in the purchase of goods, increases in the supply of money will mean like increases in aggregate demand. At the full employment level of the economy, any increase in aggregate demand will generate a proportionate increase in the price level. If the price rise is continuous, the economy may find itself confronted with the presence of inflation. This may establish a possible origin for the demand-pull inflation of "too much money chasing too few goods."

It seems logical at this point to present a brief sketch of the quantity theory of money as a means of establishing a firm foundation for the quantity theory premise. The quantity theory may be expressed as an identity:

\[ MV = PY \]

or it may be expressed in equation form:

\[ MV = PY \]

This may be explained by letting M represent the quantity of money, V represent the velocity of money (or the average number of times each dollar passes from hand to hand), P stand for the price of goods which involve income, and Y the level of NNP in real terms. The above equation is often called the

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59 Bowen, op. cit., p. 226.
equation of exchange. The equation of exchange is valid by the mere definition, because total purchases must be equated with the value of the goods purchased. 60

Some Classical economists proposed that the velocity and level of net national product are constant, or vary inversely in the same proportion; thus it follows logically that the quantity of money and average prices change in the same direction and proportionately. 61

Velocity's static position was justified by the Classical schools on the premise that money is used for the purpose of transactions only. No one would hold money for its inherent utility. 62 It therefore follows logically that an increase in the quantity of money will generate a proportionate increase in the price level. It should be noted at this point that the Y (or level of NNP) is treated as being a constant because of the Classical assumption that the economy is working at full employment. Thus output cannot exceed the barrier established by the supply of resources. Based on the notion that expenditures are proportionate to the money supply and NNP constant, it therefore seems logical that the quantity of money and the price level must be directly proportionate.

This premise of the quantity theory of money that there exists a directly proportionate relationship between M and P may be observed in Figure 1. In viewing this diagram it must be remembered that in the Classical assumption the economy is fully employed, as expressed at O3. Full employment output is achieved at O3 with a given aggregate supply function


62 Teigen, loc. cit., p. 44.
and the aggregate demand function of D₃. Increases in aggregate demand beyond the aggregate demand function of D₃ will be called forth at the expense of no increase in output. The result will be an increase in the price level with naturally no increase in the output level. It is these successive rises in the price level which are explained through the quantity theory treatment of an increase in the money supply. This increase in the money supply generates the upward shift in the aggregate demand function beyond P₃, ultimately to D₅. According to the quantity theory of money, with a 10 per cent rise in the money supply at a full employment level of output, the economy will experience a 10 per cent rise in the price level. Thus the policy implication derived from the quantity theory of money maintains that the rate of inflation may be halted by a mere restriction on the money supply.⁶³

Increased concern over the determinants of the general price level at full employment level, and the increased concern over the validity of the quantity theory of money after the Crash of 1929 and the subsequent Great Depression, has led to a re-examination of the quantity theory of money by some contemporary economists. As a result there have been various theses developed to defend and modernize the quantity theory of money. At the head of this school has been Milton Friedman.⁶⁴ The modern quantity theorists have dropped the classical assumption that full employment is the normal situation of the economy or the static treatment of velocity, which is necessary to make the classical quantity theory operative.⁶⁵ The reference to income levels as opposed to price levels is one factor which

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⁶³Shapiro, loc. cit., p. 500.
⁶⁴Bowen, loc. cit., pp. 322-324.
indicates the similarity in some areas between the modern quantity theory and the Keynesian analysis. However, the modern approach still places extreme importance on the role of money. The contemporary quantity theorist maintains that changes in income can be more accurately determined from variations in the money supply than from variations in investment.

In addition, the contemporary theorists rely on empirical data which appears to support their premise that there is more stability of behavior in the velocity of money than in the investment multiplier. The Keynesian model may become of secondary importance if the marginal propensity to save is erratic, thus making the multiplier unstable. Such a situation would tend to change the Keynesian premise of the relationship between the multiplier and changes in income. Thus if the velocity of money appears to be more stable, it may be postulated that changes in the quantity of money may be more indicative of the change in income levels than would the multiplier.

The modern quantity theory is a very different treatment than that of the original quantity theory; however, areas of similarity can be found. This may be observed from a statement of Friedman's:

Certainly the best documented and most uniform empirical generalization about inflation is that a substantial rise in the general level of prices over a substantial period is accompanied by a rise in the stock of money per unit of output and that a substantial rise in the stock of money per unit of output over fairly brief periods is accompanied by a rise in prices.

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68 Ball, loc. cit., pp. 205-206.
The traditional quantity theory of money can be closely related to the modern quantity theory of money. The major difference stems from the treatment of the level of money income. The modern quantity theory maintains that changes in the level of money income and the general price level should be expressed in terms of shifts in the demand for money. The original quantity theory of money relates the money income level and the stock of money on inflexible bases.69

The contemporary quantity theorist states that the full employment and constant velocity assumptions are not maintained as under the original quantity theory. The excessive expansion of the money supply is still identified as a significant factor in generating inflation, but under the modern theory, velocity and output are identified as variable factors.70 Thus the relationship established between price and quantity of money is not so simple as it was under the original quantity theory of money.

Keynesian Approach to Inflation

In the early days of the growth of Keynesian analysis, most economists maintained that the approach was confined to a depressed and under-employed economy. The General Theory became an economics of depression whereas the Neo-classical approach became the economics of prosperity. The Keynesian economist began to take exception to this premise and continued to argue that Keynesian analysis could be used as a means to observe general price levels in an inflationary state. As a basis of their argument they maintained that depression was a state in which demand became inadequate, while inflation was a situation in which the economy experienced excessive demand. Thus the conclusion concerning a cure in the Keynesian sense for economic fluctuations

69 Ibid., p. 206.

70 Johnson, loc. cit., p. 124.
was the manipulation of the level of demand.  

Keynes attempted to sever the close relationship which was believed to exist between the quantity of money and the level of aggregate demand. Thus the Keynesian theoretical approach to inflation rests on the income and expenditure approach rather than monetary stocks. Keynes proposed that it is possible for the economy to have a given money supply and still experience inflationary pressure. With a given money supply, a higher level of prices would tend to increase the transaction demand and thus possibly have the effect of raising interest rates. This rise in the interest rates would tend to reduce the additional investment demand which could have the effect of moderating the inflationary pressure. However, this would not completely eliminate the inflationary pressure because the added transaction's needs could be met through the rise in the interest rate which would free cash from possible speculative balances. Some cash holders may choose to purchase securities as the price of securities declined, which would have the effect of softening the fall in security prices. This effect of easing the fall in security prices could not eliminate the notion of excess demand.

It can be observed that one major difference between Keynes and the traditional quantity theorists was that the quantity theorists contend that an increase in the money supply, without an increase in productivity, would generate an increase in the price level. However, Keynes averred that the price level could rise even with a constant money supply.  

The Keynesian approach explains inflation as a result of an excess of aggregate demand over that of the full employment level of the economy. Thus he gave treatment to the refuting of the close tie between aggregate demand

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71 Ball, loc. cit., p. 62.
and the money supply. In addition, he gave consideration to those less than full employment levels in which an increase in aggregate demand could result in increased productivity of the economy rather than upward movement of prices. ⁷³

The term "inflationary gap," which has been developed out of Keynesian demand-inflation analysis, has generated in contemporary times much debate. Some economists have attempted to use the notion as a means solely for expressing the pressure exerted on a general price level which may be assumed to be flexible. Also it has been used as a means to measure the exact increase in the rate of taxation which would be necessary to restore the equilibrium for market goods and services with no increase or a very small increase in the price level. The inflationary gap analysis, defined in monetary terms, of increasing prices in a Keynesian sense involves the premise that the price level is a proportional factor of the gap. However, these are excess demand situations so that at full employment levels prices are flexible and are pulled in an upward direction by the excess demand. The Keynesian treatment can be explained through a consumption function with an inflationary and deflationary gap. (See Figure 2, page 30.)

Consumption, therefore, is a function of real income Y. Here the assumption is that the real level of investment and government spending are autonomous of the price level. The solid line C + I + G in the following graph shows the total desired real expenditures at each of the various levels of income. Income would reach the Yx level if there were no limit on real output at which real expenditures would equal real output. This point may be noted in the following graph at point D, where the aggregate expenditure curve crosses the 45° helping line. However, suppose Yfn represents the

⁷³Ibid., pp. 289-291.
full employment level on real output. Thus Yx real income cannot be obtained under these conditions. At the full employment level the aggregate expenditure curve exceeds the total output, thus leaving an inflationary gap AB. Based on these assumptions, this inflationary gap can cause prices to rise; thus the gap will not be eliminated.

The reverse of this may be observed, according to Keynes, when the aggregate real demand is insufficient to maintain or establish full employment. This situation can be expressed in a graphical manner by the broken line C' + I' + G'. This will then create a deflationary gap at the full employment level Yfn, which can be expressed through the graph by the area BC. It is possible for income to settle at the less-than-full employment level Yk if there were no tendency for prices to fall. In addition, Keynes
saw the possibility that a wage and price situation which was flexible in a downward direction may influence an expansion of real demand in a deflationary state. It was possible that the rise in real demand could generate a full employment and thus remove the deflationary gap.\textsuperscript{74}

From the various approaches established in this thesis it has been revealed that any increase in aggregate demand will generate an inflationary situation providing the economy is operating at the full employment level. This basic premise brings to light those situations in which one may question whether inflationary pressure will be continuous or will end or reduce its inflationary impact. The writer feels that justification of this premise can only be honorably given through the various premises established. The author will attempt to give a broad interpretation and coverage to these effects in the following section of this chapter.

The Interest Rate Effect

As has been pointed out, inflation has a rather limited life, in the sense of a constant money supply. However, the money supply will have, under certain conditions, been a very general influence on the life expectancy of inflation. Thus as the price level increases, the transaction demand for money will rise in a proportionate relationship to the price level. Therefore, additional transaction balances will be obtained from speculative balances with a fixed money supply. With the need for money growing to handle these transactions at higher prices at full employment level of output, security holders will find that it is beneficial to sell securities in the market. These sales of securities will generate a decline in the price of securities, and interest rates will increase by an amount necessary to draw idle cash out of speculative balances. This effect may act as an agent to restrain the

\textsuperscript{74} Gardner Ackley, \textit{Macroeconomic Theory}, p. 425.
inflationary pressure by discouraging investment through the higher interest rate the investor must pay. This will then have the effect of reducing consumption expenditures through the multiplier. The results could be that the economy may experience a downward shift of the aggregate demand schedule, thus resulting in the demand pull inflationary pressure.  

However, the effect of a rise in the interest rate contracting the demand for investments and thus acting as an agent in the restraint of inflationary pressure applies to a situation in which the investment demand or supply of savings is elastic. Thus if the elasticity of demand for money is relatively high, an increase in investment will be largely autonomous of savings. This is also based on the assumption that the supply of savings, in relation to the interest rate, is inelastic. Thus the interest rate will increase by a smaller percentage base when the demand for the speculative balances is elastic. Therefore, changes in savings and investment will be more autonomous if the demand for speculative money is elastic. Also, if the investment demand is inelastic (as well as supply of savings being inelastic), it can be observed that change in savings will be influenced by the interest rate to a very limited extent. Thus we can conclude that an increase in interest rates will not have the effect of restraining the demand-pull effect on the inflationary pressure of the economy. But it should be pointed out that a constant money supply will generate an end to the inflationary pressure on the price level. This situation might very well occur when the increase in the transaction balances will consume the total money supply. This will happen when the interest rate has increased to such

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75 Shapiro, loc. cit., p. 503.

a level that the speculative balance has declined to zero.77

The Pigou Effect

According to the Pigou Effect, people will be discouraged from building up their asset holdings and thus will spend a larger portion of their current income on consumption and reduce their savings when a decline in prices and wages enhance the real value of those assets in fixed dollar terms. Therefore, according to the Pigou Effect, real consumption will increase, as well as output and employment during deflation. This, however, is based on the assumption of an elastic supply function. It should be noted that the Pigou Effect differs from the Classical approach in the sense that Pigou maintained that an absolute fall in wage-rate level would generate increased employment. The Classical premise is that this must be a relative fall in wage-rate level, which would generate increases in employment.78

However, the reverse effect takes place during periods of inflation when, according to Pigou, the real value of assets declines. This will then generate a state in which the asset holders will allocate a larger portion of their current income to savings and a smaller portion to consumption expenditures, the purpose of which is to restore the real value of the assets which he is holding. Thus, with a given level of money income, a reduction in real demand may be experienced through a decline in the consumption expenditures. This decline in real demand may generate a condition which could act as a means to reduce the inflationary pressure of the economy. However, it is generally felt that the decline in the real value of assets will not be sufficient enough to generate a decline in the inflationary pressure.79

77shapiro, op. cit., p. 504.
78Ross, loc. cit., p. 197.
79shapiro, op. cit., p. 504.
Tax and Transfer-Payment Effect

It is possible, with a progressive tax structure and a transfer payments system which exists in some advanced economies, that we could depress the amount of gross income allocated to consumption. This is, of course, assuming that gross income increases with every inflationary round. This effect will occur as a result of the widening of the gap between gross income and disposable income as gross income increases. Therefore, to accomplish this, the tax bite must rise at a faster rate than income. In addition, the total dollar amount of the transfer payment will show little change as the full employment level of output is reached, because the transfer payments per recipient are in fixed dollar terms. Thus the ultimate effect is the decline in gross income through the tax effect and transfer payment effect that is devoted to consumption expenditures. It is this effect, like the others mentioned above, which could act as a means to reduce inflationary pressure.

Foreign Trade Effect

The foreign trade effect is based on the premise that the domestic economy experiences inflationary pressure of a greater magnitude than that of foreign countries. This domestic inflation would have the effect of making the domestic goods more expensive on the foreign markets than those goods of foreign producers. Based on this assumption, the domestic economy would experience a type of built-in restraint on the domestic economy’s inflation. This restraint would take the appearance of a decline in the net exports and an increase in the net imports of the domestic economy. The restraint would have the effect of shifting in a downward direction the

80 Ibid., p. 505.
aggregate demand function, thus reducing the domestic inflationary pressure. However, this is based on the notion that the domestic economy's propensity to import is capable of growing as a result of the inflationary pressure in the domestic economy.

Income Redistribution Effect

If the price level rises at a slower rate than money income, an individual will gain real income. The converse is also true. Based on this notion, it can be observed that an inflationary situation will have the effect of creating a redistributing effect against the fixed income groups. Thus due to the fact that the fixed income groups generally have a relatively higher propensity to consume than those of the other income groups, it is possible to expect a decrease in consumption out of a given fixed income level when the economy experiences inflation. This effect is generated due to the fact that inflation redistributes income against the fixed income groups. It is therefore conceivable that there could be a decline or downward shift in the consumption function which could have the effect of reducing the presence of inflationary pressure created by excess demand.

It should be observed that if inflation lasts for an extended period of time, those individuals in the fixed income group operating on a long-term contract may be given time to catch up the lag. This lag or catching up will come in the form of higher wage rates or interest rates, which can be used as a means to discourage future inflationary pressure. This action to protect and re-establish the real income level of fixed income levels will generally take the form of political action. An example of this would be the action

81 Ross, loc. cit., p. 197.
82 Day and Beza, loc. cit., pp. 445-446.
83 Ross, op. cit., p. 274.
84 Shapiro, loc. cit., p. 505.
Congress recently took to restore the real income of those on social security. The income redistribution effect appears to have validity in retarding a period of rapidly severe inflation and of little effect in long periods of creeping inflation.  

Converging or Diverging Inflationary Gaps

It has been observed above that a fixed money supply will limit inflationary pressure. However, the effect of a changing money supply on an economy which is experiencing inflationary trends can be shown. It, therefore, becomes necessary to pose the question of when the increase in the money supply can operate as a means to limit inflation or act as a means to generate inflation.

The money supply increases by an amount needed to satisfy the rise in transaction requirements. Therefore, the interest rate effect will not be experienced. For the purpose of brevity and simplicity, the aggregate demand function will be limited to the observations dealing with consumption and investment spending. The graph below illustrates that the equilibrium level income is \( Y_1 \) when we assume autonomous investment. The equilibrium level of income will be established by the intersection of the \( C + I \) function with the 45° helping line. Therefore, at \( Y_1 \) planned investment and planned savings are equated. The assumption of a stable \( P \) in relation to \( Y \) is broken. Therefore, above some given level, an increase in \( Y \) may result in higher \( P \). Also the assumption of a perfectly elastic supply function up to the full employment level of output is assumed, at which time the supply function becomes perfectly inelastic.

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85 Ross, op. cit., p. 275.

Figure 3
INFLATIONARY AND DEFLATIONARY GAP

$Y_1$ on the Y axis represents the full employment level of output. Therefore, up to $(Y_1)$, all changes in $Y$ are comprised of changes in output. But beyond the full employment level of output, they are composed of changes in $P$ (price). The equilibrium income level, as described above, at $Y_1$, is equal to the joint expenditures, $E$, of consumers and investors at the full employment level of output of goods at current prices. If the economy experiences an increase in autonomous investment, the result will be an upward shifting of the investment function which leads to a rise in expenditures to $E'$. This movement can be expressed through the graph by the movement
from I to I₁. Therefore, based at current prices, desired expenditure exceeds the full employment level of output by the amount A. This area A in the above graph is called an inflationary gap and will lead to a rise in (Y), income levels. It can readily be observed that a decline in the autonomous investment will lead to a reduction in expenditures. This may be expressed graphically through a decline in autonomous investment from I to I"', which will therefore generate a decline in expenditures to E"'. At point E"' the desired expenditures fall short of the full employment level of output by the area B. This area or amount B may be called the deflationary gap which will generate a decline in the income level, (Y). ⁸⁷

Now looking just at a situation in which autonomous investment increases from I to I', one would conclude that a new equilibrium position is created at Y₂. The new equilibrium is derived from the intersection of C + I and the 45° helping line. This increase in income, which is generated by the increased investment, is equal to inflationary gap A times the simple multiplier 1/(1/C) and appears to eliminate the inflationary gap. This elimination of the inflationary gap appears to restore the equilibrium state, but at a higher price level. Due to the fact that real output is constant at both (Y₁ and Y₂) income levels, (P) price level must increase by the amount of rise in the income level. ⁸⁸ A new equilibrium level will be created only if the increased price level causes real demand to decline. In order for this to occur, money income must rise faster than money demand. Due to the inflationary gap, it is known that money income must rise; therefore, if the money demand increases within the area E'F and the 45° helping line, real demand will decrease with each increase in money income. Under such

⁸⁷Bronfenbrenner and Holzman, loc. cit., p. 604.

⁸⁸Shapiro, loc. cit., p. 508.
circumstances, the inflationary gap will not continue, but the equilibrium position will be restored at some future money income level. This would simply mean in the present model that consumers or investors are getting less than they desire. If, however, they raise money expenditures at a rate equal to that of money income in order to obtain the desired goods, the demand for money will follow a different path. This path will be one in which an equilibrium position will not be obtained. Money expenditures will increase at a faster rate than the increase in money income. Therefore, with output fixed at the full employment level of output, prices will increase with each increase in the money income and expenditures. Thus inflation will proceed with no boundaries. 89

Convergent Inflationary Gap

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89 Bronfenbrenner and Holzman, op. cit., p. 604.
As assumed before, the inflationary gap appears out of an increase in autonomous investment. This can be expressed graphically through an upward shift from I to I₁, which creates the inflationary gap A₁. Business through its desire to obtain more goods will therefore increase its investment expenditures in an attempt to obtain the desired goods at the current prices. The price level moves in an upward direction above the existing full employment price level because consumption and investment expenditures exceed pre-existing levels of expenditures. This upward movement of expenditures is illustrated graphically through the movement from E₁ to E₁'.

The rise in investment will generate a rise in income by an amount represented by the movement from P₁₀ to P₂₀. The increase in the price level is proportionate to the increase in expenditures; therefore, increases in income will be composed of higher prices. The increase in the price level will create a situation in which the increase in investment (I) will not supply the desired level of goods needed by business. The amount of money business will spend in attempting to satisfy its wants will be dependent on the price level. At the price level P₁, the level of investment expenditures I₁ would be needed, but it can be noted that this is an inconsistent level of investment with a price level P₁. Due to the fact that the price level raises the money income level proportionately, business can only realize its needs by increasing investment expenditures. Thus the increase in investment by the business sector will mean that each income level will amount to the same proportion of money income at pre-existing levels. The broken line projected from the origin and constructed to intersect the I' and the vertical at P₁₀ represents this proportion. The kink which occurs in the above investment

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90 Figure 4 is taken from Day and Beza, loc. cit., pp. 301-304.
91 Ross, loc. cit., p. 295.
curve at $P_{1o}$ appears because ($P$) price increases after income exceeds $P_{1o}$.

Another inflationary gap will be produced as a result of the movement in investment from $I_1$ to $I_2$. Note that the income level is now determined at $P_{2o}$. The inflationary gap $A_2$ is now greater than that of the increase in investment $I$. The movement from $P_{1o}$ to $P_{2o}$ represents the increase in income and the increase in consumption expenditures by the amount $C(P_{2o} - P_{1o})$. In this case $C$ represents the marginal propensity to consume out of the various given money incomes. This inflationary gap is smaller than the previous inflationary gap, the respective gaps being $A_1$ and $A_2$. This inflationary gap raises money income to $P_{3o}$, but the gap appears to be declining in size. The business sector will raise its level of investments because with each step it comes closer to obtaining the desired level of goods. Based on these conditions, it can be observed that the inflationary gap will eventually be closed when income increases to $P_{0}$. At this equilibrium state the price level will be stable and with an income level of $P_{e0}$. At the equilibrium level of investment expenditures, $I_e$, business is able to secure the desired amount of goods; therefore, there will be no further rise in investment expenditures. Thus due to the fact that real consumption expenditures fall below the real consumption expenditures at $P_{1o}$, even though the economy's real income remains constant as money income levels increase, the equilibrium situation is re-established. When the process ends at $P_{e0}$, the amount of real output secured by the consumer has declined and the share secured by business is larger. A possible explanation for the money consumption expenditures not rising as fast as the aggregate money income of the economy may be found in the Pigou Effect and the other effects discussed earlier. In addition, the notion of the money illusion may be

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used as a basis for an explanation. The money illusion avers that the consumers consider and react to increases in money income as though they were increases in real income. They are not cognizant of the higher price level which may be associated with the increase in money income. This higher price level is proportionate with the increase in the money income level. Thus consumers will in all probability save the same portion of an increase in money income as would be the case if it were an increase in real income. It is therefore likely that as money income rises, the greater will be the fraction of unchanged real income which is saved, and the smaller will be the fraction which is consumed. This decline in real consumption expenditure enables the transfer of resources, thus enabling the satisfaction of the demand that businesses have for investment goods. 93

Divergent Inflationary Gap

As the inflationary pressure carries the money income to higher levels, consumers may attempt to establish their desired level of real consumption at the previous full employment level. This point may best be observed through a graphical explanation.

93 Shapiro, loc. cit., p. 511.
As we observed earlier the inflationary gap \((A_1)\) is set into motion by a rise in investment expenditures from \(I_1\) to \(I_1'\). In order to enjoy the same real consumption at \(P_{10}\), the consumer will increase money consumption expenditures with each increase in the price level.\(^94\) Therefore, at \(P_{10}\) the consumption function will have a kink in it. The same ratio exists between money consumption expenditure to money income as that which existed between income and consumption expenditures at the pre-inflation full

\(^{94}\) Figure 5 is taken from Ross, _loc. cit._, p. 295.
employment income level $P_{10}$. Therefore, based on this, it may be said that the slope of the consumption function beyond $P_0$ shows the same ratio that existed at pre-inflationary full employment levels of output. The broken line, in the above graph, which intersects $C_1$ and the vertical at $P_{10}$ indicates this proportion at the various income levels beyond $P_{10}$.

As income increases as a result of the inflationary gap, consumption expenditures increase in proportion to the increases in income and the price level. This increase in income is expressed in the above graph by an increase from $P_{10}$ to $P_{20}$. As consumption expenditures increase from $C_1$ to $C_2$ and investment expenditures increase from $I_1$ to $I_2$ there appears a new inflationary gap $A_2$. This new inflationary gap will be larger than that of the previous inflationary gap. The gap will act as the means by which income will be pushed upward. The upward movement of income will create a new inflationary gap $A_3$ which will in turn be larger than the previous one. The gaps will continue to be larger providing that real demand of business and consumers for goods will be larger than the flow of output established at the full employment level. Therefore, based on this premise, there is no end to the inflationary process.

As it was pointed out earlier, the models were inclusive of only consumption expenditure and investment expenditure. The point should be made that the introduction of government expenditures does not change the above explanation unless the expenditures move in opposite directions.\(^{95}\) Therefore, an increase in all three factors would generate the same type of inflationary gap at $P_{10}$ as before. This inflationary gap would, as before, push the price level upward. Therefore, if the sectors desire to attempt to satisfy their real demand by increasing their respective money

\(^{95}\)Shapiro, \textit{op. cit.}, p. 513.
expenditures at a rate proportionate to that of price level increases, inflation will continue. The inflationary gap will continue to widen. If the inflationary conditions lead to a decline in the real demand of the various sectors, then aggregate real demand will decline in a proportion equal to that of fixed level of the aggregate real output. If this state occurs, it will then be possible for the inflationary pressure to terminate.

Bent Hansen's Dynamic Model

Adequate coverage of the notion of demand-pull inflation cannot be given without reference to the work of Bent Hansen. Hansen's work represents a major innovation to demand-inflation. As was pointed out earlier, the Keynesian analysis is used as a basis to view inflation from the area of excess demand for goods. Hansen proposes that wages and prices, either together or determined on an autonomous basis, are the beginning of the foundations which result in the confusion of demand and cost inflation. Hansen's notion is that in a pure demand inflation wage rates should be determined by supply and demand forces of the labor market.\(^\text{96}\) His analysis is of a dynamic nature to the extent that there are two price levels. His model incorporates a price level for goods and a price level for factors.\(^\text{97}\) Again, his model and analysis can best be understood through a graphical presentation.


\(^{97}\)Gardner Ackley, Macroeconomic Theory, p. 436.
On the vertical axis the price-wage ratio is being measured, which may be expressed as the inverse of the real wage. The supply curve (S) expresses the amount of aggregate output that firms will desire to supply at each price-wage ratio. Thus it can be said to represent what employers would be capable and willing to supply with an unlimited supply of labor. However, S' represents the output indicated at the full employment of the labor supply. The difference between S and S', based on the horizontal axis, can therefore represent the inflationary gap of the factor market.

98Bronfenbrenner and Holzman, loc. cit., pp. 606-607.
At all price-wage ratio above P/W4, the inflationary gap takes a position of existence. 99

The aggregate demand curve for output is expressed as D in the above graph. The assumption that the marginal propensity to consume of wage earners is greater than that of non-wage earners is expressed in the downward slope of the aggregate demand curve. 100 Hansen, in addition, points out that the reverse is also true in which the slope of the aggregate demand function could be positive. The difference between D and S, as measured on the horizontal axis, is used as a means to measure the inflationary gap in the goods market. It can be observed that below P/W1, an inflationary gap appears in the above graph. 101

Hansen uses the following equations to express dynamic relationships, which exist between time rate, price level, and wage levels in the various markets:

\[
\frac{dp}{dt} = f_1 (D - S')
\]

\[
\frac{dw}{dt} = f_2 (S - S')
\]

The first equation assumes that the time rate of the price level is a function of the inflationary gap of the goods sector or market. The second equation maintains that the time rate of the wage level is a function of the inflationary gap of the labor sector or market. 102 These functions are not inherently linear, but are assumed to pass through the origin and to be monotonic. When the price levels and wage levels are positive, the gaps are

99 Ackley, op. cit., p. 437.
100 Bronfenbrenner and Holzman, op. cit., p. 606.
101 Ackley, op. cit., p. 437.
assumed to be positive. 103

In observing the above graph it can be noted that goods prices will not rise if there exists no goods gap. Such a state may exist if \( P/W = P/W_1 \). However, there is a rather large factor gap, which indicates that wage levels will rise. If this generates a decline in \( P/W \), the magnitude of the factor gap will decline and create growth in the goods gap. At the price-wage ratio of \( P/W_2 \) the goods gap, expressed in the graph by AB, would generate a definite rate of price increase in the goods market, just as the factor gap AC will generate an increase in the wage level. 104 The price wage ratio will become static if the rates (price-wage) coincide to one another. Therefore, at \( P/W_2 \) the condition may be called quasi-equilibrium. 105 The price-wage ratio would fall further if at \( P/W_2 \) there was a small goods gap which produced a slow increase in the price level. This would be coupled with a relatively larger factor gap which, in turn, would generate a factor wage rate increase. Assuming that the price-wage ratio fell as far as \( P/W_3 \), the factor gap would decline to DE and the goods gap would be magnified to DF. This would present a situation in which price levels would rise rather rapidly and wage rates would rise rather slowly. In addition, it can be observed that at the price-wage ratio of \( P/W_4 \), the price-wage ratio would rise because of the elimination of the factor gap and thus cause stabilization of the wage rates and the magnification of a goods gap and the inevitable price rise. Therefore, it may be concluded from the Hansen model that the rate or speed of inflation will depend on sensitivity of wage and price movements to the magnitude of the related gaps. 106

103 Ackley, op. cit., p. 437.
104 Bronfenbrenner and Holzman, loc. cit., p. 607.
105 Hansen, loc. cit., p. 169.
106 Ackley, Macroeconomic Theory, p. 438.
Sectoral Shift Inflation

This idea has ties which are related to the price-inflexibility of the Great Depression. This is naturally involved with the price of capital goods and wage rates in the heavily organized sectors of the economy.\(^{107}\) This background has been the basis upon which the sectoral or demand shift inflationary theory has been built. This notion maintains that inflation is neither generated by cost-push nor demand-pull forces, but that both factors come into effect.

This may best be observed by looking at a hypothetical example of an economy near its full employment level. It is then assumed that the economy is not subject to any overall excess of demand, but experiences a change in the composition of its demand. This change in the composition of its demand does not affect the economy's aggregate demand. In addition, the economy will have one or more industries which will experience increases in demand for their output while others will experience a decline in the demand for their output. Those industries which experience the increase in demand may very well expand their output to its capacity limit. It is still possible that the rise in demand may generate and increase prices and profits. Industries will seek more labor as a means to expand output. Thus in a static labor market wage rates may have to be raised as a means to draw the necessary labor factors to that industry. It should be pointed out that these increases in wages can be easily met out of enlarged profits.\(^{108}\) Thus in those industries experiencing increases in demand, it can be expected that they will have higher prices and wages.\(^{109}\)

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107 Bronfenbrenner and Holzman, loc. cit., p. 612.
108 Shapiro, loc. cit., p. 527.
109 Schultze, loc. cit., p. 34.
These price increases in the definite sector of the economy do not significantly lead to a rise in the general price level and thus may not generate any significant inflationary pressure. However, if the price and wage rates were flexible in a downward direction, there would be no effect on the general price level, and thus no inflationary pressure.¹¹⁰ It has been observed that prices and wages may very well increase in periods of adverse economic conditions. A possible explanation for such an occurrence is that those workers in industries with declining demand schedules will ask for higher wages the same as will those in industries experiencing expanding demand.¹¹¹ It can therefore be observed that industries with a declining demand schedule will not be capable of absorbing the increased wage bill. Since price setting is more closely related to the cost factor, it is therefore possible that higher wages will lead to higher prices. Thus a foundation is laid for the cost-push treatment of inflation.¹¹²

The basis for the demand-shift treatment of inflation is that the United States' economy on an industry-by-industry basis tends to push prices and wages upward with an increase in demand for labor, but does not contract prices or wages with a decline in demand. If labor factors were extremely mobile and prices and wages flexible in both directions, demand shift inflation would not exist. Therefore, as a result, there would be no absolute price level increase but only relative price level changes. Today with organized labor capable of exerting pressure as a means to duplicate like gains won by others, the notion of relative wages becomes of minor importance. This will in the long run eliminate changes in relative prices which are the

¹¹⁰ Bronfenbrenner and Holzman, loc. cit., p. 612.
¹¹¹ Schultze, op. cit., p. 37.
¹¹² Shapiro, loc. cit., p. 527.
means for preventing an absolute increase in the general price level which may result from demand shift conditions.\textsuperscript{113} The following chapter examines "cost-push" inflation, another possible explanation of inflationary pressures.

\textsuperscript{113}Ibid., p. 528.
CHAPTER III

Cost-Push Inflation

Cost-push inflation and its theoretical basis are not new ideas, but have in recent decades received increased professional concern. The term "New Inflation" was coined out of the initial contemporary inquiries of cost inflation.114 This treatment of the cause of inflation is exactly opposite in many respects from that treatment given to demand-pull inflation. In general terms, the cost-push school basically maintains that an increase in cost, created by factors trying to maintain or increase their share of the total product, has furnished the foundation for a price level rise.115 As a result, cost-push inflation has been labeled a phenomenon created by labor union pressure on wage rates. In addition to being called cost-push inflation, it has been called wage-cost inflation.116

This analysis recognizes that wage rates in a contemporary economy are not always determined by the mechanism of market-determined prices. Some economists have gone so far as to refer to these as "administered prices" in the sense that they do not always rise as a result of an excess of quantity demanded for labor over the quantity supplied.117 It should be noted that

114 Bronfenbrenner and Holzman, loc. cit., p. 613.
even though the prices and wage levels may increase as a result of an ex-
cessive demand for labor, they will not always decline as a result of a
shrinkage in demand.\textsuperscript{118} This may be observed through a brief examination
of the notion by means of a graphical treatment. This approach is designed
to show a cost-push inflation state resulting from upward pressure on the
aggregate supply function in the absence of excess demand.

\textbf{Figure 7}

CHANGES IN AGGREGATE SUPPLY FUNCTION AND COST-PUSH INFLATION

It can be assumed that the intersection of $S_1$ and $D_1$ establishes a full-employment level of output. Now assume that the aggregate supply function is shifted in an upward direction to $S_2$ by various forces. (Note: keeping $D_1$ constant, it can be observed that aggregate output declines from $O_1$ to $O_2$ and the price level increases to $P_2$ from $P_1$.) Output will continue to decline as the aggregate supply function moves upward. Thus an inflationary rise in the price level generated by this means may be called pure cost-push or supply inflation.\textsuperscript{119}

It has been established that there exist two basic causes for the upward pressure on the aggregate supply function. This upward pressure is generally thought to exist as a result of labor union demand for higher money wages or business firms in a monopolistic or oligopolistic market pushing for higher profits through price increase. The author will attempt to examine these two factors in the hope of generating a basis for establishing the cause of cost inflation.

Wage-Push Inflation

As was pointed out earlier in the discussion of demand-pull inflation, it was observed that an increase in the aggregate demand function at the full employment level of output would generate price increases. Reflecting back, it can be remembered that these higher prices were supposedly the source of higher profit which established a basis upon which an employer would be encouraged to expand employment. Thus the increased demand for labor would cause an increase in wage levels and force the aggregate supply function upward.\textsuperscript{120}

\textsuperscript{119}Figure 7 is taken from Shapiro, \textit{loc. cit.}, p. 515.

\textsuperscript{120}Ackley, \textit{op. cit.}, p. 46.
It can be noted, therefore, that the increase in the wage level was generated as a result of the excess quantity of demand for labor. However, the concept of wage-push inflation must be confined to an upward movement of labor cost that generates higher prices and not the result of these higher prices. The upward pressure on the aggregate supply function can be only of an autonomous nature. The "induced" pressure on the aggregate supply function can be brought about as a result of excess demand. This "induced" pressure can be created in an economy which possesses a strong or a weak labor movement. But the notion of autonomous pressure on the aggregate supply function can have greatest effect through a strong labor organization pushing for higher wage rates in a situation where there is excess labor demand. In the previous graph it was the autonomous pressure on the aggregate supply function which caused the shift from $S_1$ to $S_2$, with a constant aggregate demand function. This shift generated the decline in output; whereas a reduction in output will not be forthcoming when induced by excess demand.\footnote{Ackley, \textit{Macroeconomic Theory}, p. 440.}

It is maintained by some economists that a wage-push inflation will not materialize when wage rates are established by purely competitive market forces.\footnote{For a different treatment see Section V of Walter A. Morton, "Trade Unionism, Full Employment and Inflation," \textit{The American Economic Review} (March, 1950), pp. 13-59.} In such a market wage rates would vary in response to the variations of the supply of and demand for labor.\footnote{Perlman, \textit{loc. cit.}, p. x.} It is possible for the wage-push inflationary pressure to develop even with a labor force which is

\footnote{Ackley, \textit{Macroeconomic Theory}, p. 440.}

\footnote{Bronfenbrenner and Holzman, \textit{loc. cit.}, p. 615.}

\footnote{Ackley, \textit{op. cit.}, p. 440.}

\footnote{Perlman, \textit{loc. cit.}, p. x.}
only partially unionized. This is, of course, assuming that the organized sector of the labor forces have sufficient power to generate an increase in money wages that exceed that of productivity. As can be observed in the United States and other free economies, non-union wages tend to be tied very closely to those of union wages. Based on this position, it is possible for wage-push forces to generate their pressure from the organized sector of the labor force and spread over to the unorganized sector. This reaction in the unorganized sector of the labor force may be due to preventive methods of unorganized firms. Such preventive methods could be used as a means to retain capable workers, prevent unionization, and improve employee morale. Thus, it may be concluded that the generating of an economy-wide wage-push inflation requires a partially organized labor force or threat of one.

The basic assumption which is involved in the above treatment of wage-push inflation is that the increase in wages will result in price level increases, since wage increase generates a higher cost for supply than the demanded goods. The ability of the labor union to demand wage rate increases depends to a great degree upon the demand situation facing the individual firms. Those firms operating in a purely competitive market are confronted with a completely elastic demand curve for their output. Therefore, wage rate increases, which bring about price level increases, would

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128 Shapiro, loc. cit., p. 517.

only result in loss of sales. The ultimate effect through labor's con­
tent demand for wage rate increases is that the individual firm may go out
of business. However, a firm operating in a less than perfectly competitive
industry may experience wage-push pressure as a result of an increase in the
wage rate, since all firms concerned will, in all probability, act in unison
with one another. Thus it is possible that there will be no loss of total
revenue as a result of raising prices so as to cover wage bills because of
the degree of inelasticity of demand the firm faces. These firms will
be facing a less than perfectly elastic demand curve; and unless other com-
peting industries are placed in the same state, the industries may in the
ultimate end experience a loss.

Unions find that their best opportunity to raise wage rates in excess
of productivity with minimum loss of jobs occurs in oligopolistic industrial
markets. These oligopolistic industries are also faced with a less than
perfectly elastic demand function. Thus wage-push inflation tends to be
found in unionized oligopolistic industries. It should be noted that these
demands for higher wages will undoubtedly spill over into other unionized and
non-unionized industries. This will occur as a result of rival unions at-
tempting to maintain wage gains for its union members.

An additional point should be interjected as to variables which will
influence the business attitude or the response to wage rate increases.

130 For further information see Gottfried Haberler, "Wage Policy and
Inflation," in The Public Stake in Union Power, edited by Philip D. Bradley
131 Bronfenbrenner and Holzman, loc. cit., p. 616.
132 Perlman, loc. cit., p. xiv.
133 Bronfenbrenner and Holzman, op. cit., p. 616.
134 John M. Blair, "Administered Prices: A Phenomenon in Search of
These additional variables are of a demand-pull nature such as the level of unemployment, level of business activity, and the expected change in the level of business activity. Generally, it has been found that when business conditions are optimistic, firms are more willing to grant large wage increases and want to avert chances of a strike. At this state, the short-run demand curve is less elastic and is anticipated to move in an upward direction. Thus profits will in all probability be high, and cost of work stoppage will be costly.\(^\text{135}\) However, when business conditions are rather slack, short-run demand curves will be expected to move in a downward direction, and profit expectations will be bleak. As a result, the firm will be reluctant to grant large wage increases and will be more willing to accept strikes and work-stoppages. Here it can be observed that when latent resistance is encouraged by multi-employer bargaining, the demand curve facing the group is less elastic than that facing the individual firm. However, it will still have enough elasticity to generate losses to the group through wage increases.\(^\text{136}\)

**Criticism of Union Policy**

As was implied in the previous discussion, union policy has received the blunt of the blame for wage-push inflation. It has been maintained by some economists that the notion of price inflation has become a necessary ingredient to full employment, which forces the alternatives of underemployment or inflation.

Unions are generally attacked on three broad areas. First, union post-war wage policy has been the cause of price level increases which were founded on their monopoly power. This monopoly power is believed to be inherently


inflationary. Second, unions should have pursued a policy of money wage stabilization. A resultant force of this policy would have created a lesser degree of inflation. Third, unions should have used their political influence as a means by which to establish and retain wage and price controls after the war years. This, it is felt, would have resulted in less of a wage-price spiral.\textsuperscript{137}

Profit-Push Inflation

Profit-push inflation is but another type of supply inflation. It is the result of the oligopolist's or monopolist's drive to raise prices so as to maintain a large profit margin. It is possible, however, that the desire for larger profit may be established in the absence of rising cost.\textsuperscript{138} It must be noted that a necessary condition for profit-push inflation is the presence of an imperfectly competitive market. As can be observed under a perfectly competitive market, sellers will not be able to set their prices. Thus, in the oligopolistic or monopolistic market, goods and services prices are said to be administered by their sellers. The degree in which these administered prices are said to be administered by their sellers. The degree in which these administered prices are pushed in an upward spiral above cost will help determine the amount of profit-push inflation.\textsuperscript{139} Most economists are of the belief that profit-push plays a more minute role than that of wage-push. This notion is based mainly on the belief that profits comprise a smaller part of price than wages. Wage-push factors would in all probability be continuous pressure; whereas, profit-push would be "a once and for all"


\textsuperscript{138} Bronfenbrenner and Holzman, \textit{op. cit.}, p. 622.

\textsuperscript{139} Shapiro, \textit{loc. cit.}, p. 519.
effect. This may very well be founded on the notion that profits not only
depend on high prices but also demand and cost-per-unit variables. It is
obvious that the cost per unit is dependent on changes in price. This acts
as a means to give the firm time when considering price increases in the
absence of increases in demand or wages. However, the worker's real wage
is dependent on money wages, demand, and prices.\textsuperscript{140} In addition, union
demands for higher wage rates have no real feeling for the amount of un-
employment under a given aggregate demand.\textsuperscript{141} This premise may be based on
the notion that labor views the demand for labor as being highly inelastic.
In addition, price setting on the business side is determined by the notion
of profit maximization. This is, in turn, based on the argument that market
realities enter into the business sector's decision concerning prices which
are not germane to the wage setting policy of union.\textsuperscript{142}

Further, there appears to be less likelihood of a profit-profit spiral
than a wage-wage spiral. This position is based mainly on the notion that
higher profits are most likely to be viewed through increased productivity
and sales rather than through price increases.\textsuperscript{143}

Mark-up Inflation

In attempting to explore the notion of mark-up inflation, simplified
models will be used which convey an understanding of the notion.

It must be assumed that the business sector establishes the price of
its goods and services based on a given mark-up above direct materials and
direct labor. In addition, efficiency is assumed to remain constant. Also
it is understood that the labor sector will be capable of obtaining wage

\textsuperscript{140} Bronfenbrenner and Holzman, \textit{op. cit.}, p. 622.
\textsuperscript{141} Haberler, \textit{loc. cit.}, pp. 38-43.
\textsuperscript{142} Shapiro, \textit{loc. cit.}, p. 519.
\textsuperscript{143} Bronfenbrenner and Holzman, \textit{loc. cit.}, p. 622.
increases which will accrue to consumer prices. Thus it may be observed that the labor sector will price its services on the basis of a given mark-up above the cost of living.\footnote{144}

This mark-up pattern which is employed by business and labor will determine, to a great degree, whether the price level will be stable, rising, or falling. However, it can usually be observed that the spiral may get its origin through such a case that follows. Assume that the existing wage level is $2.00, and that this generates a price index of 104. This price index drives workers to ask for and receive a wage rate of $2.08. This wage rate in turn generates a price index of 108.2, and so on. This spiral would continue as long as the mark-up mechanism of wages and prices remained. Thus if each factor involved prices on the grounds of a given mark-up above the price, then the magnitude and duration of the spiral could be significant.\footnote{145}

An interesting point can be observed through the notion that the great majority of a business firm's sales are to other firms. Thus when one firm increases its price level, in order to maintain its margin, this will generate rising costs for other firms. This rising cost may very well precipitate price increases in other firms, thus generating an endless reaction.\footnote{146} Ultimately this will have its effect on the consumer's cost of living. This increase in the consumer's cost of living will generate an increase in wage rate, thus magnifying the spiral.\footnote{147} The dollar value of sales between

\footnote{144}Gardner Ackley, "A Third Approach to the Analysis and Control of Inflation," in Richard Perlman, \textit{Inflation Demand-Pull or Cost-Push?}, p. 53.

\footnote{145}Ackley, \textit{Macroeconomic Theory}, p. 453.


\footnote{147}\textit{Ibid.}, p. 144.
business firms tends to be larger than the dollar value of sales between labor. Based on this notion, it is possible that with a stated wage rate, the business sector could generate a significant mark-up inflation. This statement is based on the assumption that the necessary conditions and circumstances could generate such a state.

There is another point which will have a definite influence on mark-up inflationary spirals. This point has to do with a slow improvement in productivity which could terminate the mark-up inflation ultimately. The increased productivity may very well have the role of suppressing the influence which increases in wages and prices may have on labor cost and material cost.\(^{148}\) Thus the growth of productivity may have the effect of establishing stability between mark-up patterns and prices. However, the effect of increased productivity may be retarded through the insatiable drive by various parties to use the gains in productivity to expand their mark-ups. Thus an economy experiencing this demand may naturally find its mark-up inflation continuing indefinitely. It can be observed that labor does not merely want a constant "real wage" but a rising real wage. In addition, business will also be guilty of wanting to gain from the merits of this increased productivity. Business generally attempts to justify this premise on the basis that the increased productivity was generated from business investment and management skills. Thus the "engine" of inflation is, under these circumstances, the struggle between business and labor to maintain or improve their returns, which may not be possible out of the given total national income.\(^{149}\)


One of the outstanding contributions of the mark-up inflation hypothesis is that it places emphasis on a justified relationship between buying price and selling price. This is naturally where unions and business place their emphasis. However, the hypothesis that most prices are established by mark-up over cost is rejected by most economists. The mark-up mechanism used will be influenced by the operation and changes of fundamental supply and demand forces. If a given mark-up is too high in relation to the supply and demand forces, the seller will then experience a smaller than expected sales volume; thus inventories will accumulate. Prices will then have to be adjusted downward.\textsuperscript{150}

The mark-up hypothesis may not be of much significance in an analysis of the structure of relative prices in relation to the problem of resource allocation and income distribution. If a standard mark-up, based on the seller's cost, is used as a means to set prices, it is then possible that with an inflationary rising cost mark-ups may not change in relation to a price change. The mark-up hypothesis may be more meaningful than the assumption that prices adjust quickly to "clear the market" through supply and demand forces.\textsuperscript{151}

An additional hypothesis, which is often presented, is one concerned with mark-ups used by labor unions in requesting higher wage rates. These demands for high wage rates will tend to increase and decline as employment increases and decreases. This variation in the mark-up theory of inflation tends to make it a more meaningful tool. This premise is founded on the basis that inflation may occur with some slack in the economy. In addition, most economists feel that this shows why inflationary disturbances may

\textsuperscript{150}Ibid., p. 455.

\textsuperscript{151}Gardner Ackley, "A Third Approach to the Analysis and Control of Inflation," in Richard Perlman, Inflation Demand-Pull or Cost-Push?, pp. 55-56.
become involved with an increase in total demand. 152

Phillips Curve

As has been maintained (by Samuelson, et al.), restrictive monetary and fiscal policies are more successful in combating demand inflation than supply inflation. One of the most outstanding characteristics in distinguishing demand and supply inflation is that supply inflation will have price rises with output below the full employment level. Thus, the effect of monetary and fiscal tools in reducing demand may very well irritate the inflationary pressure. Moreover, it is possible that the restrictive policy may discourage the business sector's desired level of investment spending, which may retard labor productivity. It is the labor productivity which may be the force which discourages wage-push inflation. In addition, however, the wage-push inflation may very well be retarded by reducing aggregate demand and output. This reduction in aggregate demand and output may have the effect of creating a large unemployment rate; and the rate of unemployment may very well be socially and economically intolerable. 153

Since wage rates are at the very basis of the price structure, increased concern has been given by economists to the relationship between wage rates and the rate of unemployment in the labor force. This analysis was initially researched by A. W. Phillips. 154 Quite appropriately, the relationship of wage rates and the rate of unemployment has been called the Phillips Curve. While this analysis is subject to use in any economy, A. W. Phillips has confined his observations to the United Kingdom. Phillips'
observations involve simply plotting each percentage of the money wage increase against the percentage of the labor force unemployed. \textsuperscript{155}

\textbf{Figure 8}

It can be observed in the above diagram that the relationship appears to be inverse; thus the curve will slope downward to the right. This can be noted through curves A and B. \textsuperscript{156} This relationship would indicate that there exists an inverse relationship between the rate of money wage and the rate of


\textsuperscript{156}Figure 8 is taken from Shapiro, loc. cit., p. 521.
unemployment. Thus, it is believed that a significantly high unemployment rate will retain money wage increases down to a non-inflationary rate.\(^{157}\)

It can be maintained that an increasing rate of unemployment can be viewed as a means to eliminate price inflation of a wage-push type.\(^{158}\)

It should be observed that not every rate of money wage increase is considered to be inflationary. As can be viewed as a case in point in the above diagram, the horizontal line, \(OW\), shows the percentage increase in labor productivity and thus the percentage increase in the money wage rate on the average, which can be rewarded by employers without generating a price increase. The vertical line in the above diagram relates to the tolerable percentage level of unemployment. Most economists today would assign this percentage figure within the range of 3 to 4 per cent.\(^{159}\)

The point of intersection of \(OW_1\) and \(OU_1\) are of prime significance (call this point \(S\)) because it may very well be used to explain the effect of monetary and fiscal policy.\(^{160}\)

Thus if the curve took on the characteristics of curve \(A\), which intersects the \(OW_1\) function to the left of the point of intersection, it may be concluded that the wage-push type of inflation may be retarded by monetary and fiscal tools. This, therefore, maintains that the wage-push inflation may be retained without socially or economically unacceptable high levels of unemployment. Thus, if the unemployment rate declined to \(U_2\) and the wage increase \(W_2\) exceeded the productivity rate of \(W_1\), it could be concluded that a wage increase signifies wage-push inflation.\(^{161}\)


\(^{159}\) Samuelson and Solow, \textit{loc. cit.}, pp. 123-124.

\(^{160}\) Johnson, \textit{loc. cit.}, pp. 132-133.

\(^{161}\) Shapiro, \textit{loc. cit.}, p. 522.
Restrictive monetary and fiscal tools will limit the wage-push inflation by a reduction of aggregate demand.\textsuperscript{162} This reduction in aggregate demand would generate an unemployment rate of around $U_3$, which is below $U_1$. Due to the fact that the unemployment rate is below that of $U_1$, the level of unemployment will be socially and economically acceptable. If the curve took on the characteristics of $B$, which cuts the intersection point to the right, wage-push pressure could be checked by what may be called unacceptable levels of unemployment, $U_4$. Only through this means can the wage demands be kept in line with productivity increases. Based on this, the analysis would tend to indicate that the restrictive monetary and fiscal policy would not create a solution.\textsuperscript{163}

Concluding Comments

As has been pointed out in this chapter, cost-push analysis assures to a great degree the presence of monopoly elements. These monopoly elements may appear either in the product market, if considering profit-push, or in the labor market if wage-push leads to the cost-price increase. As was mentioned, if the product market were perfectly competitive and if an industry or a firm attempted to impose a price rise to obtain more profits, there would result a loss of sales to competitors. A labor market with a competitive characteristic would react to a wage increase for the labor factors with loss of total employment for the labor factors. Thus it can be observed that an attempt to raise profits through a price increase in a competitive market in all probability would be self-defeating. This notion is, of course, based on the assumption that the current price is set at the optimum profit


\textsuperscript{163}Shapiro, \textit{op. cit.}, p. 522.
position. However, as was concluded earlier, in monopolistic markets (where an optimum profit price is perhaps not currently being charged) the monopolist may very well hesitate to raise price in the absence of obvious demand-pull elements.

In addition, wage-push is often equated with union-push. It should be noted that in some instances non-union wages rise equally with those of union wages. However, non-union wages rise because of demand-pull factors. Wage increases may also be generated through firms' attempting to forestall unionization by paying union scale. But, under most circumstances, demand for wage increases, in the absence of price increases, is generated by union wage policy.
APPENDIX

Quantitative Analysis

It may be observed that the earlier macroeconometric models served as a linear function for a given price level. Therefore, the expression of the explicit wage rates and price equation as variables was often avoided. The recent increasing concern with wage rates and prices has been brought to the forefront by the increasing influence of the price level movements and technical improvements in dealing with non-linearity.\textsuperscript{164}

Classical Wage Theory and Price Theory

The Classical economists averred that full employment was the normal state for a capitalistic economy. Their very premise was built on the notion of flexible prices and wages, in which these factors would bring about and restore full employment. They proceeded to contend that any decline in total spending would be mirrored by a proportionate decline in the price level. Prices would, therefore, be pushed in a downward direction as a result of the increased competition among producers due to the decline in expenditures. The question at the forefront is what effect will this have on wage rates. To maintain the full employment premise, it was necessary that money wages would therefore decline, but by a greater amount than the price decline. Thus the real wage would decline. This lesser decline in price in relation to the money wage would stimulate business to expand output.

\textsuperscript{164}L. R. Klein, "Wage and Price Determination in Macroeconometrics," unpublished work partially supported under a Cooperative Research Grant of the Department of Health, Education, and Welfare.
Note that the money wage would be driven in a downward direction by competition among workers for jobs. Thus employers would find it profitable to hire additional workers at the lower money wage. It was this competition in the market which ruled out involuntary unemployment.\footnote{Shapiro, \textit{op. cit.}, pp. 397-399.}

The Classical school's assumption of competition in the labor market was the basis for the depressing of the money wage. However, we find that the dropping of that assumption leads to the notion of rigid money wages. There is not a barrier to a rise in the money wage when excess demand for labor appears, but there are barriers to a fall in the money wage when excess supply appears.\footnote{Ibid., pp. 411-412.} Thus the money wage may be somewhat fixed in a downward direction by institutional factors such as collective bargaining, minimum wage legislation, and others.\footnote{Sidney Weintraub, \textit{Some Aspects of Wage Theory and Policy} (Philadelphia: Chelton Books, 1963), p. 52.} When the worker provides his services at this money wage level, it is perfectly elastic.\footnote{K. C. Kogiku, \textit{An Introduction to Macroeconomic Models} (New York: McGraw-Hill Book Company, 1968), p. 110.} Keynes, therefore, leveled one of his major attacks on the Classical school on the flexibility of wages. Keynes concluded that perfect elasticity of the money wage rate below some level made wages sticky on the downward side.\footnote{Shapiro, \textit{loc. cit.}, p. 413.}

Mark-up Factor

The Weintraub model brings out a supplement to the Keynesian model, which exposes the possibility of a price level increase in which employment and output decline. In addition, Weintraub introduces the mark-up factor and the reciprocal of the wage share as an exogenous constant. This notion
is expressed as $K = -\frac{1}{170}$. It should be noted that the mark-up factor may occur through the business sector or labor sector. For example, suppose that a wage level of $2.00 leads to a price index of 104, and that price index of 104 leads workers to ask for a wage of $2.108, which raises the price index to 108.2 and the wage level to $2.164, and so on. Note that with the business sector participating, the consumer would find that price increases could be following a mark-up of labor cost. Thus we may see that wage increases may generate a proportionate mark-up of prices. This could have the effect of making a constant automatic upward shift in the price level as a result of the mark-up above the wage rate. \(^{171}\)

The short-run forecasting models used in current analysis of economic fluctuations have followed the guidelines of the (1) price mark-up equation, (2) wage bargaining equation, and (3) a labor force participation equation. These equations have served as a means to determine and explain price levels, wage rates, and labor force, given labor requirements and effective demand. \(^{172}\)

The Wharton Econometric Forecasting Unit Model was developed to deal with problems which arise as the capacity ceiling is approached. The Wharton Model uses the following equation for the manufacturing price level:

$$P_m = \alpha + B_1 \left(\frac{W_m}{X}\right) + B_2 (C_p) + B_3 (\mathcal{GW}) + \frac{1}{i} \mathbb{E}_{n}(P_{m-1})$$

This equation avoids the difficulties of the general price level by concentrating on manufacturing prices. \(^{173}\) The purpose is to confine these observations to the same dependent variable as that of the Wharton Model, that being

\(^{170}\)Weintraub, _loc. cit._, pp. 52-53.

\(^{171}\)Ackley, _Macroeconomic Theory_, pp. 452-453.

\(^{172}\)Klein, _loc. cit._, p. 9.

\(^{173}\)Ibid., p. 15.
manufacturing prices. However, some modified independent variables will not be introduced.

(1) $W_r =$ real wage per hour
(2) $O_x =$ production index
(3) $C_p =$ capacity utilization index
(4) $P_m - 1 =$ manufacturing prices with a lag
(5) $W_r =$ labor unit cost

The major concern is with the regressing of the real wage per hour, production index, and manufacturing prices with a lag on the dependent variable with incorporation of the capacity utilization as another independent variable. In addition, capacity utilization will be omitted as an independent variable from the regression equation. Attempts will be made at measuring the influence of incorporating labor unit cost as an independent variable with the other independent variables. Also, attempts will be made at measuring the influence of capacity utilization and then omit its influence. It, in addition, serves as an indicator of the level of economic activity and indicates the relative employment and unemployment in the economy. Manufacturing prices were recorded with a lag on a yearly basis in order to avoid as much serial correlation as possible. The collected data was deflated on the base of 1957-1959 = 100.

Set I

\[ y = 34.195488 + 21.108066(W_r) + - .36405232(O_x) + .065049872(P_m - 1) \]
\[ (6.1859932) \quad (3.9681758) \quad (.072828859) \]

Long-run elasticity $R^2 = 968954$
Variance = .11680772
SDEV = .34177148
$DW = 1.523$

$t$ test values
\[ (5.5278902) \quad (5.3193378) \quad (-4.9987449) \quad (-.32298094) \]
\[ y = 26.829502 + -19.825824(WR) + -.34925335(OX) + .027536016(CP) \\
(9.6621647) (4.1763382) (.074290931) (.027475457) \\
+ .077379733(Pm-1) \\
(.24752929) \]

Long-run elasticity

\[ R^2 = .969253 \]

Variance = .11568070

\[ SDEV = .34011870 \]

\[ DW = 1.344 \]

t test values

\[ (2.7767591) (4.7471799) (-4.7011575) (1.0022041) \]

\[ (.31260836) \]

WHERE:  
\[ y \] = independent variable (manufacturing prices)
\[ R^2 \] = coefficient of determination
\[ SDEV \] = Standard Deviation
\[ DW \] = Durbin Watson
\[ WR \] = real wage per hour
\[ OX \] = production index
\[ Cp \] = capacity utilization index
\[ Pm-1 \] = manufacturing price with a lag
\[ Wr \] = labor unit cost

In this first set of observations it may be noted that the Durbin Watson \( d \) statistic lies between the lower limit and the upper limit. It was found that the regression coefficient of the manufacturing price with lag was shown to be insignificant by the \( t \) test for both equations. The \( t \) test for all other regression coefficients was considered to be significant. The \( R^2 \) values for both equations were rather high, but the \( R^2 \) value for the equation which included capacity utilization index was higher. The regression coefficients of the real wage per hour in both equations were highly elastic in the short run. The long run elasticity of real wage per hour regression coefficients in both equations were elastic.
Set II

\[
y = -0.087064495 + 1349.3598 \frac{\text{WR}}{(0.043506574)} + 0.513355(P_{m-1})^{0.043506574}(404.73364) \frac{\text{OX}}{(1.4239737)}
\]

Long-run elasticity

\[
\frac{\text{WR}}{\text{OX}} = 2753.79
\]

t test values

\[
(-2.0011806) \quad (3.3339457) \quad (3.6050877)
\]

\[
y = -18.922424 + 1317.7934 \frac{\text{WR}}{(5.81005)} + 0.060701951(\text{CP}) + 0.62113392(P_{m-1})^{0.026825685}(3408.5418) \frac{\text{OX}}{(1.2897035)}
\]

Long-run elasticity

\[
\frac{\text{WR}}{\text{OX}} = 3467.87
\]

t test values

\[
(-3.2568388) \quad (3.8661503) \quad (2.2628297) \quad (4.8160991)
\]

In this second observation it may be noted that the Durbin Watson d statistic lies between the lower limit and upper limit. It may be concluded that the test is inconclusive, and that more observations are needed to determine if there is positive autocorrelation. We found that the t test for all the regression coefficients proved that they were significant. The R^2 values for the second set showed that relatively higher proportions of the variations in the dependent variables were explained by the independent variable. However, it was found that the R^2 value for the regression equations, including the capacity utilization index, was of a higher value. It may be noted that in the short run the regression coefficient of capacity utilization is inelastic. In both equations the long-run elasticity regression coefficients of labor unit cost are highly elastic.
Conclusions of Set I and Set II

It can be concluded that the Durbin Watson d statistic for autocorrelation was inconclusive and that more observations would be necessary for all the tests of the equation. Those tests in which we measured the effect of capacity utilization index had higher $R^2$ values than those which omitted capacity utilization index. However, those tests which included real wage per hour and production index as independent variables, with and without capacity utilization, had very close $R^2$ values. When considering labor unit cost as an independent variable, it was found that the t test results show the regression coefficient of manufacturing price with a lag to be significant. However, when real wage per hour and production index are both considered to be independent variables, it was found that the regression coefficient or manufacturing prices with a lag are insignificant. All other regression coefficients are indicated by the t test to be significant.
Selected Bibliography

Books


Articles


Kalecki, M. "What is Inflation?" Institute of Statistics Oxford. III (June 7, 1941) 159-164.


Committee Report


Unpublished Pamphlet