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KEYNES'S THEORY AND INFLATION

by

MING-TANG LIN
B. A. Nihon University, Tokyo, Japan, 1959
M.A. Waseda University, Tokyo, Japan, 1961

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Approved by:

Major Professor

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CHAPTER I

INTRODUCTION

John Maynard Keynes, one of the greatest economists in the 20th century, was born in the year in which Karl Marx died--1883. He wrote many books concerning economic theory, some of which became very important books in the history of economics such as A Tract on Monetary Reform (1923), A Treatise on Money (1930), The General Theory of Employment, Interest, and Money (1936), and How to Pay for the War (1940). Especially his General Theory had a great influence throughout the world. Like Adam Smith's Wealth of Nation in the 18th century and Karl Marx's Das Kapital in the 19 century, Keynes' General Theory has been the center of controversy among both professional and nonprofessional writers. Smith's book is a ringing challenge to mercantilism, Marx's book is a searching criticism of capitalism, and Keynes's book is a repudiation of the foundations of laissez-faire.

Keynes was an excellent student of A. Marshall, even though finally he developed a theory which often was referred to as the "Keynesian revolution." In the period while he was writing his A Tract on Monetary Reform, he was still moving along the traditional lines regarding the influence of money, his quantity theory of money was fundamentally based

on the Cambridge "cash-balance" quantity equation. In the Tract he attributed all the major ills of capitalism to monetary instability; unemployment, insecurity, business losses, uncertainty, profiteering, and speculation "all proceed, in large measure, from the instability of the standard of value."[1] Keynes argued for a managed currency, in place of the traditional gold standard to which most economists and statesman then assumed Britain would return at an early date. The managed currency should be directed toward stabilization of the internal price level, thus avoiding the speculative dangers of excessive inflation as well as the retarding forces of deflation.

Keynes spent five years in writing his A Treatise on Money. So far he was a believer in Marshallian economics and he had been endeavoring to study the application of Marshallianism in practice. But he began to find inconsistency between the reality and the traditional theory. He changed from an orthodox to an unorthodox economist in the period between his Treatise (1930) and the General Theory (1936). As he said in the Preface of the General Theory:

> When I began to write my Treatise on Money, I was still moving along the traditional lines of regarding the influence of money as something so to speak separate from the general theory of supply and

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[1]Keynes: Tract Preface. p. v.

> demand. When I finished it, I had made some progress towards pushing monetary theory back to becoming a theory of output as a whole. But my lact of emancipation from preconceived ideas showed itself in what now seems to me to be the outstanding fault of the theoretical parts of that work, (namely, Books III and IV), that I failed to deal thoroughly with the effects of changes in the level of output. . .This book, on the other hand, has evolved into what is primarily a study of the forces which determine changes in the scale of output and employment as a whole; and whilst it is found that money enters into the economic scheme in an essential and peculiar manner, technical monetary detail falls into the background.[2]

Thus his change of thought not only tells us he withdrew from the classical school in that time, but also tells us that our economics had come to a turning point. Keynes finished the scheme of the so-called "Keynesian economics" in his General Theory.

The analytical structure of the General Theory was designed to handle the economic problems of an essentially depressed and under-employed economy. The traditional economics on this view becomes the economics of prosperity and the General Theory the economics of depression.

After the General Theory, Keynes' most remarkable publication is the pamphlet How to Pay for the War in which he developed a new analysis of inflation based on the principles of the General Theory. His suggestions regarding wartime and postwar inflations had an important influence upon the British anti-inflationary policies. In this

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[2]Keynes, General Theory, Preface, vi & vii.

pamphlet, Keynes himself approached the inflationary problem from the point of view of income analysis, rather than specifically from the point of view of monetary analysis, and it is on this latter work that the application of typical Keynesian income analysis to inflationary problems rests.

Keynes' theory of inflation is in essence a demand-pull inflation theory, so this report is going to discuss solely demand-pull inflation.

Since the principle of effective demand is the most fundamental and also most important theory developed by Keynes, this report will start from it in Chapter II. The demand-pull analysis (or gap analysis), the generalized quantity theory of money, and the concept of true inflation are the kernel of Keynes' inflation theory, they will be intorduced in Chapters III and IV respectively. To present Keynes' theory of inflation, we cannot ignore wartime and postwar inflations on which Keynes' contribution in the field of inflation theory has come to a climax. This report will discuss them in Chapter V. Although Keynes' analysis of demand-pull inflation is still very important in modern macroeconomics, new economic phenomena take place day by day, and his theory therefore needs to be supplemented. Many post-Keynesians have made attempts to enrich his demand analysis. This report picks up some of them in Chapter VI. Then a conslusion will follow it.

CHAPTER II

THE PRINCIPLE OF EFFECTIVE DEMAND

The principle of effective demand is a theory that the magnitude of the aggregate demand, which is the sum of the consumption demand and the investment demand of a community, determines the magnitude of the volume of employment, the quantity of output, and the level of national income. In other words, total employment depends on total demand, and unemployment results from a deficiency of total demand. Effective demand manifests itself in the spending of income. As employment increases, income increases. A fundamental principle is that as the real income of a community increases, consumption will also increase but by less then income. Therefore, in order to have a sufficient demand to sustain an increase in employment, there must be an increase in real investment equal to the gap between income and the consumption demand out of that income. That is, employment cannot increase unless investment increases.

Based on this principle, we can understand how the national income of a community is determined in Figure 1.

(1) Assume that investment is constant.

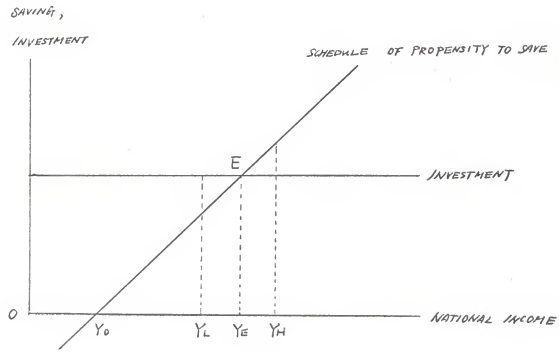
(2) At point Yo saving is zero. Yo is the point of balance of income and consumption expenditure.

(3) The level of national income is determined at the point Y_E, that is, the amount which people are willing to save equals to the

amount which entrepreneurs are willing to invest.

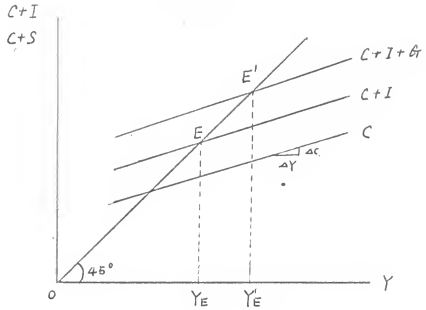
(4) If the level of national income is greater than Y_E, the amount which people are willing to save will be greater than the amount of investment; therefore, national income will be decreased. Conversely, suppose the level of national income is less than Y_E at point Y_L; then the amount of investment will be greater than the amount of saving, and therefore national income will be increased. At points Y_H and Y_L, national income cannot be stable; it will come to point Y_E which is equilibrium.

Figure 1



We also can explain the theory of the determination of national income by using the schedule of propensity to consume as in Figure 2.

Figure 2



(1) Line C is the schedule of propensity to consume.

(2) Assume that investment is constant, then line C+I stands for the aggregate demand. If line C+I is given, the intersection of C+I line and 45° line at point E is the equilibrium point, and the level of equilibrium income is Y_E since at this point saving is equal to investment.

(3) If we have government expenditure, the aggregate demand is shown by the line C+I+G, and the level of equilibrium income is point Y'_E.

(4) The condition of stable equilibrium is that either line C or line C+I should have a flatter slope than 45° line. If it were not so, the economic system will diverge from the point Y_E. The slope of C, in other words, is marginal propensity to consume, that is:

Marginal propensity to consume = $\frac{\Delta C}{\Delta Y}$.

$0 <$ marginal propensity to consume < 1, the slope of C line or C+I line is flatter than the 45° line.

CHAPTER III

KEYNES'S THEORY OF DEMAND-PULL INFLATION

Inflation is caused by further increases in effective demand after full employment is attained. As a result only prices rise because the elasticity of output in response to increases in effective demand is zero. In other words, inflation is an excess of aggregate demand over the aggregate supply. Keynes' theory of inflation is an analysis of such an excess demand.

Every inflationary situation may be looked at from either of two points of view: (1) from one point of view inflation is an excess of aggregate demand for goods and services over aggregate supply, (2) from the other point of view, it is an excess of money supply over the aggregate demand for money. Increases in quantity of money can influence the economic system through liquidity preference, the interest rate, the inducement to invest, the multiplier, and national income. An increase in the total quantity of money increases the supply of idle balance (M_2)[3] and,

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[3]According to Keynes' General Theory (p. 199), $M = M_1 + M_2 = L_1(Y) + L_2(r)$ where M_1 stands for the amount of cash to satisfy the transactions and precautionary motives, M_2 stands for the amount held to satisfy the speculative motive. L_1 is the liquidity function corresponding to an an income $\bar{Y}$, which determines M_1, and L_2 is the liquidity function of the interest rate r, which determines M_2.

through the liquidity preference function, it tends to lower the interest rate, although if liquidity preference is perpectly elastic (liquidity trap) the interest rate will not fall. The lower rate of interest increases the inducement to invest. The increase in investment causes income in money units to increase by more than the increase in investment, according to the principle of the investment multiplier. The increase in money income must be sufficient to cause an amount of saving out of that income equal to the increase in investment. Since income cannot increase in real terms (assuming full employment), it increases in money terms by means of a rise in prices. This is a state of true inflation because prices are rising when employment and output are constant.

Of course, Keynes recognized that offsetting in certain of the factors affecting aggregate demand might prevent increases in the quantity of money from increasing aggregate demand. For example, liquidity preference might rise, a MEC might fall, the propensity to consume might fall.

To explain the demand-pull inflation, the concepts of inflationary gap and deflationary gap are often used, and these gaps are analyzed by means of Keynes' basic tools such as consumption (c), savings (s), and investment (I).

Since Keynes assumes that:

$D = C+I$, $Y = C+S$, and $D = Y$ so $I+C = C+S$

The left side can be regarded as effective demand, and the right side as the level of full employment (national income).

(1) Suppose $(I+C) < (C+S)$ (that is, $I < S$)

then $(C+S)-(I+C)$ = deflationary gap

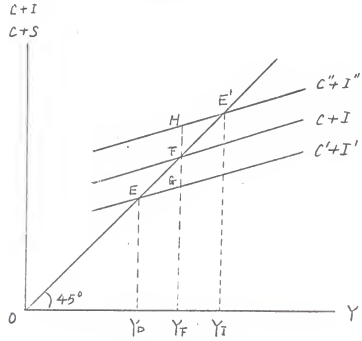
(2) Suppose $I+C > C+S$ (that is $I > S$)

then $(I+C)-(C+S)$ = inflationary gap

Thus, inflation arises because investment is more than adequate to fill the gap between income and consumption at the level corresponding to full employment at existing prices.

This also can be explained by using the following figure:

Figure 3



(1) Deflationary Gap: Let the income level of full employment be at Y_F, and the line C'+I' stand for the total demand of the community; then the equilibrium income level is at Y_D, and this community is in a situation of deflation. This community is lacking in effective demand of FG to reach full employment. FG is called "deflationary gap."

(2) Inflationary Gap: Suppose the total demand of a community is line C"+I", then the income level looks like it is at Y_I, but as a matter of fact, the income level cannot go beyond the income level of full employment, so the real level of income will be stopped at Y_F. At the same time, prices rise. Such a full employment situation accompanied with inflation. Keynes calls "true inflation." The effective demand is more than full employment by an amount equal to HF. HF is called "inflationary gap."

Inflationary gaps and deflationary gaps often appear in a free system community, and Keynes asserts that they will not be automatically eliminated; therefore, Keynes argues that the government must be responsible for closing these gaps by using the policies of manipulating taxes, interest rates, or government expenditure, if full employment can be maintained.

Keynes recognizes the necessity of government intervention, in order to maintain full employment. This assertion can be regarded as a challenge to the fundamental principle of Smith's laissez-faire.

CHAPTER IV

THE QUANTITY THEORY OF MONEY AND TRUE INFLATION

(1) The Classical Theories

At a period prior to 1936, Keynes almost accepted the traditional quantity theory of money without any serious question. This theory, which was widely accepted before Keynes' new theory appeared in the General Theory, may be summed up in either of two ways, as follows:

(A) Fisher's "Transaction Theory of Money"

Fisher's famous "Equation of Exchange" is:

$MV = PT$

Where T ..... Total quantity of Transaction

P ..... Price level

M ..... Quantity of currency

V ..... Velocity of circulation

Fisher assumes that T and V are constant, therefore P can be determined in proportion to M.

This theory is based on two assumptions:

(1) P can change in the same proportion as MV;

(2) MV will change in the same proportion as M.

(MV = money expenditure)

In other words, this theory is valid only in the case of full employment. When the economy is in the situation of under-full employment, increases of money expenditure stimulate production, consequently the quantity of transaction

(T) will be increased, thus presenting the price level from changing in the same proportion as M. Moreover, when an economy experiences business fluctuations, the velocity of circulation also fluctuate, so that the quantity of money expenditure does not change in the same proportion as the quantity of money.

(B) Cambridge Cash-Balance Theory of Money

The well-known "Cash-Balance Equation of Money" (or called Cambridge Equation of Money) is:

$$M = kPY$$

$$M = kPT'$$

Where Y represents real income, (or the maximum output in response to full employment) k the ratio of holding money in cash to his real income. ($k = \frac{1}{V}$). Suppose k, and Y are constant, prices will change in the same proportion as the quantity of money. (But prices will change in inverse proportion to the ready purchasing power kT'.) This theory was set forth and popularized by the Cambridge economists such as Marshall, Pigou, and Robertson.

The "Cambridge" economists acknowledged that velocity of circulation and the total transaction are changeable, they failed to explain it adequately.

These two theories mentioned above regard money only as a "ZIRKULATIONSMITTEL" (a means of circulation); they ignored that money has another function, that is, money

may be hoarded as an asset. Keynes emphasized this point in his General Theory.

(2) Keynes' Theory

Traditionally value theory deals with the elasticities of supply and demand. But in the theory of money and price, the elasticity of supply has in the simpler quantity theory discussions become zero, and demand has been thought to be proportional to the quantity of money. Keynes introduces the concept of elasticity not only into the theory of value but also into the theory of money. The theory of money and the theory of value thus become integrated into one theory.

Keynes enunciated the "Quantity Theory of Money" as follows:

> So long as there is unemployment, employment will change in the same proportion as the quantity of money; and when there is full employment, prices will change in the same proportion as the quantity of money.[4]

But the real world is so complicated. According to Keynes' analysis, effective demand will not change in proportion to changes in the quantity of money; prices will not change in proportion to changes in aggregate demand; marginal cost will rise as employment increases; bottlenecks will arise before full employment is reached; money wage rates will tend to rise before full employment

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[4]J. M. Keynes: The General Theory p. 296.

is reached; and finally the renumeration of factors other than labor will not change in the same proportion as money wage rates. Thus it is evident that the simplified Quantity Theory does not hold.

Keynes developed a so-called generalized statement of the Quantity Theory of Money in Chapter 21 of the General Theory. From this theory we can find what is his concept of true inflation.

According to Keynes' theory, an increase in effective demand can change not only employment but also can change the expected price and output. He defines the elasticity of employment in response to changes in effective demand (Ee), the elasticity of output in response to changes in aggregate demand (Eo), and the elasticity of expected price in response to changes in effective demand in term of wage units (E'p) as follows:

$$Ee = \frac{dN}{dDw} \cdot \frac{Dw}{N} \quad \ldots\ldots\ldots\ldots (1)$$

$$Eo = \frac{dO}{dDw} \cdot \frac{Dw}{O} \quad \ldots\ldots\ldots\ldots (2)$$

$$E'p = \frac{dPw}{dDw} \cdot \frac{Dw}{pw} \quad \ldots\ldots\ldots\ldots (3)$$

Since O.Pw = Dw, we have

$$\frac{dO}{dDw} \cdot \frac{Dw}{O} + \frac{dPw}{dDw} \cdot \frac{Dw}{Pw} = 1 \quad \ldots (4)$$

or

(2) + (3) then

$$Eo+E'p = 1 \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

This is to say, the sum of the elasticity of price and of output in response to changes in effective demand (measured in terms of wage-units) is equal to unity. Effective demand spends itself, partly in affecting output and partly in affecting price.

He also defines the elasticity of money-wage rates with respect to changes in aggregate demand (Ew) and the elasticity of the price level in response to changes in demand (Ep) as follows:

$$Ew = \frac{dw}{dD} \cdot \frac{D}{w} \quad \ldots\ldots\ldots (6)$$

$$Ep = \frac{dP}{dD} \cdot \frac{D}{P} \quad \ldots\ldots\ldots (7)$$

The relation between Eo, Ep, and Ew is

$$Ep = 1-Eo(1-Ew) \quad \ldots\ldots (8)$$

Keynes regards this as the first step to a generalized Quantity Theory of Money. This equation tells us that a change in price level depends on Eo and Ew.

Based on these relations, Keynes tells us how the price level will change in response to changes in quantity of money. He defines the elasticity of aggregate demand with respect to changes in the quantity of money (Ed), and the

elasticity of price (i.e. the price level) with respect to changes in the quantity of money (E) as follows:

$$Ed = \frac{dD}{dM} \cdot \frac{M}{D} \quad \ldots\ldots\ldots\ldots \quad (9)$$

$$E = \frac{dP}{dM} \cdot \frac{M}{P} \quad \ldots\ldots\ldots\ldots \quad (10)$$

According to Keynes' assumption,

$$Eo = Ee \,.\, Eo \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (11)$$

Substitute (11) in (8),

$$Ep = 1\text{-}Ee \,.\, Eo\ (1\text{-}Ew) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (12)$$

Since

$$Ep.Ed = \left(\frac{dP}{dD} \cdot \frac{D}{P}\right)\left(\frac{dD}{dM} \cdot \frac{M}{D}\right) = \frac{dP}{dM} \cdot \frac{M}{P} = E$$

$$\text{therefore } E = Ep.Ed \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (13)$$

Substitute (12) in (13), then we have

$$E = Ed(1\text{-}Ee.Eo+Ee.Eo.Ew) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (14)$$

Keynes calls this equation "generalized statement of the Quantity Theory of Money."

Keynes defines the true inflation as:

> When a further increase in the quantity of effective demand produces no further increase in output and entirely spends itself on an increase in the cost-unit fully proportionate to the increase in effective demand, we have reached a condition which might be appropriately designated as one of true inflation.[5]

When E is equal to unity, the price level will change in the same proportion as changes in the quantity of money.

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[5]Keynes: The General Theory p. 303.

In other words, when E=1, we are in a situation of true inflation. According to the equation (15), this condition can be satisfied, for example, when:

(a) Ed = 1 and Ew = 1, or

(b) Ed = 1, Ew = 0 and Ee.Eo = 0, or

(c) Ed = 1, and Eo = 0

Keynes believed that in general E is not unity, and that was safe to make the generalization that E is, as rule, less than unity.

Thus the significance of the generalization of the Quantity Theory of Money is to integrate the theory of money and the theory of output into one theory in contrast with the traditional theory which deals with them separately. In the classical Quantity Theory of Money, the output is assumed to be the maximum output at full employment; thus changes in the quantity of money can influence price level only. But now we know the influence of the quantity of money on the price level depends on the level of employment. This means the Keynes' equation

$$M=L_1(Y)+L_2(r)$$

can be written in

$$M=L_1(PO)+L_2(r)$$

Thus the quantity of money can determine not only the interest rate but also the price level.

CHAPTER V

WARTIME INFLATION AND POSTWAR INFLATION

(1) Wartime Inflation

It is not an exaggeration to say that inflation and full employment are the normal conditions of a wartime economy and that deflation and unemployment are the normal conditions of a peacetime economy in the present stage of capitalist development. From the following historical data it is evident that inflation is inevitable for a country whenever she is engaging in warfare.

Wholesale Prices in the United States
(1926 = 100)

Period	Prices	Period	Prices
1800-1809	100	1880-1889	60
1810-1819	110	1890-1899	51
1820-1829	72	1900-1909	61
1830-1839	75	1910-1919	88
1840-1849	65	1920-1929	104
1850-1859	65	1930-1939	77
1860-1869	94	1940-1946	100
1870-1879	76	1947-	152

Source: Alvin H. Hansen: Monetary Theory and Fiscal Policy (New York, McGraw-Hill, 1949) p. 143

In the above table we found the index fluctated whenever a war was taking place as follows:

(A) Period 1810-1819

Napoleonic War (1812-1814)

(B) Period 1860-1869

Civil War (1861-1865)

(C) Period 1910-1919

World War I (1914-1918)

(D) Period 1920-1929

World Economic Crisis (1929-1934)

(E) Period 1940-1946

World War II (1939-1945)

During World War I, the analysis of inflationary pressures was discussed largely in terms of a simple quantity theory relating the supply of money and the supply of goods. A larger percentage increase in money supplies than in the output of goods will naturally lead to an increase in general prices, since total output was fixed within reasonably narrow limits by the quantity of basic productive resources available, inflationary price increases were charged primarily to increased money supplies due to war borrowing. Until several years after the World War I, Keynes analyzed the facotrs determining the price level almost entirely in terms of the quantity theory of money, and accepted the validity of the traditional theory without serious questioning.

Great progress has been made in the anlysis of inflationary pressure since his General Theory was published. This book made important contributions to monetary analysis in general and contributed significantly to our understanding of inflationary pressure even though he did not go on to consider the process and timing of inflationary

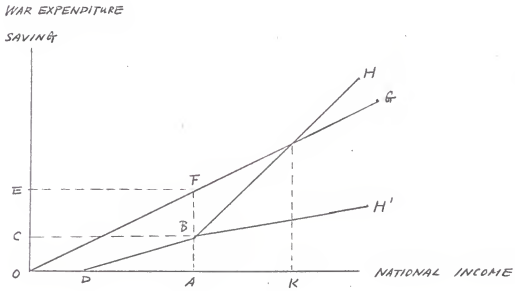
movement. However, he established the framework of the theory of determination of national income and employment in this book. Here he developed the principle of effective demand, the concepts of propensity to consume, marginal efficiency of capital, and liquidity preference....etc. He applied these concepts to the analysis of inflationary pressures in his small tract How to Pay for War published during the World War II.

Theoretically, inflation is not different in wartime from peacetime except in the greater pressures that exist in war. In wartime, the total effective demand for consumers goods (D_1) plus the effective demand for investment goods (D_2) exceeds the total value of output at full employment in terms of existing prices. Suppose the government does nothing in suppressing the excessive demand, prices will rise until income is sufficient to permit saving to equal investment. The determinant variables of the volume of effective demand in Keynes' theory are the propensity to consume, the marginal efficiency of capital, and the interest rate. In wartime, the effective demand is especially sensitive to the stimulus of the marginal effeciency of capital, because wartime investment is not influenced largely by changes in the interest rate; and war expenditures are largely a function of military requirements, taken in conjunction with estimates of the quantity of consumers goods,

with a tendency to maximize war production and to minimize consumption output.

Keynes' analysis of wartime inflation was essentially an equilibrium analysis in which he assumed that inflation was static. Let us examine his static analysis by using Smithies's figure[6] as follows:

Figure 4



[6]Found in Arthur Smithies's "The Behavior of Money National Income Under Inflationary Conditions" Quarterly Journal of Economics, Vol. 57, Now. 1942.

(A) Assumptions and definitions

The economy is assumed to be in an equilibrium position of full employment and also to be closed in the sense that the value of imports does not increase as a result of the inflation. In general, changes in gross-money-national-income (Y) cause changes in average level of prices (P).

$P = \frac{Y}{Q}$, where Q is real income, i.e. national income valued at the initial prices.

Let OA: the initial equilibrium values of income, Q, (OA will be determined by the point B);

ODB: Normal propensity to save, ("normal" means the marginal propensity to save that will be eventually established for any level of income that remains constant for a sufficient period of time.);

OC: the rate of war expenditure;

BH: the normal propensity to save out of national income above its initial value, OA.

(B) Suppose at prevailing prices the government proposes to increase W to OE and to maintain it at the proportion $\frac{OE}{OA}$ of Y. Then for any value of Y, the money value of W will be given by the line OG.

(C) If the slope of BH is greater than that of OG, the inflation may eventually come to an end; for a level of national income exists at which the normal savings of the economy are equal to the amount of war expenditure. A new equilibrium is established at income OK, and the average price inflation that has occured above the initial price level will be $\frac{AK}{OA}$.

(D) If the slope of BH is eaual to, or less than, that of OG, the inflation will go on indefinetely; there will be a widening gap between war expenditure and normal savings, which must be bridged by abnormal savings induced by the even increasing rate of war expenditure.

(E) If the desire of the economy to save depends on its real income alone, the inflation will have no effect on the proportion of income saved, since real income is assumed constant. In this case the normal propensity to save (marginal and average) will be given by BH', which is a continuation of OB.

(F) Conclusion

An inflation will have an upper limit, if the proportion of war expenditure to national income is less than the marginal propensity to save out of inflated income. Otherwise, it will continue indefinitely.

Keynes' method can only tell us whether a wartime inflation has a limit or is infinite, but it does not tell us at what speed the inflation will progress. The analysis of the inflationary process was left for the post-Keynesians. It will be introduced briefly in a later section of this report.

(2) Postwar Inflation

Inflation is always caused by an excess of effective demand above the level needed for full employment according to Kaynes' theory, so the principle of effective demand also may be applied to postwar or peacetime inflation. If the volume of investment exceeds the size of the gap between income and consumption at full employment, prices rise until the size of the gap is accommodated to the amount of investment. The three elements of effective demand in wartime are government expenditure, private consumption, and

private capital formation. At the conclusion of a great war, the first element falls precipitously while the second and third rise sharply.

In general the pressures of postwar inflation can arise from both the demand side and the supply side. By demand is meant the income demand or the demand of money income for things, while supply here means available output for which money income can be spent. The major inflationary factors break down as follows:

(A) On the demand side.

(a) Disposable Income and Consumption

Disposal income (i.e., income payments to factors after personal taxes) is likely to remain at a high level partly because of postwar relaxation of high wartime taxes but largely because of a high level of postwar national income. A part of disposable income is saved, but most of it is spent on consumption. Since household consumption (as distinguished from community consumption related to national income) is a function of disposable income, the larger the amount of disposable income the larger the absolute amount of consumption expenditure. Consumer demand is greatly stimulated, moreover, by the reduction of current savings, by the use of accumulated savings, by the possession of liquid assets (other than savings, e.g., readily cashable securities), and by the expension of consumer credit, thus adding to the inflationary pressures.

(b) Private Capital Formation

Postwar conditions usually favor a strong inducement to invest as well as a strong propensity to consume, to cause a two-fold pressure toward an inflationary rise in prices. (The inducement to invest is determined by the rate of interest and the marginal efficiency of capital.) The great postwar housing boom, for example, is an inflationary factor, and many years will be required to fill the postwar demand. Inflationary pressures on rents and building materials tend to continue for an extended period after the war.

(c) The Money Supply

In a postwar period, the increased money supply is mainly due to an inordinate increase in demand deposits resulting first from government spending[7] and then from bank expansion of loans and investments. Expansion of bank credit is at once a cause and an effect of inflationary pressures, since it reflects partly an enlarged income stream resulting from the use of bank credit and partly a growing business and personal demand for funds due to higher price and costs. A postwar increase in the money supply,

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[7]At the conclusion of the second World War the total outlays of the federal government declined sharply from the wartime levels, but remained very high in comparison with about $8.5 billion in the late 'thirties and less than $4 billion in the 'twenties. (Dillard: The Economics of J.M. Keynes p. 263)

however brought about, is a presumption in favor of a high rate of spending.

(d) Foreign Demand

An additional factor in the increased monetary demand is foreign expenditures for domestic goods and services. This factor is particularly significant if a country maintains an export surplus, as the United States tends to do. The inflationary impact of foreign demand is weakened to the extent that the marginal propensity to import offsets additional expenditures for domestic goods and services out of the increased national income due to that foreign demand. If foreign countries cannot increase their sales of goods and services to the United States, for example, and thus obtain dollar exchange, they will probably liquidate some of their holdings of dollar balances, sell their gold, and spend the proceeds of loans and grants that may be provided by the United States. It is, therefore, very likely that foreign demand will exert considerable inflationary pressure on domestic areas of shortages which may be "a focal point of spreading inflation."

(B) On the supply side

(a) Shortages of Supply of Goods and Services

In contrast to a sharp rise in the monetary demand, the supply of goods and services is likely to increase but slightly in a postwar period. The basic limiting factor is of course full employment. Shortages of labor

equipment, and raw materials partly account for the inadequate supply of certain goods, but exports (e.g., American wheat and steel) doubtless aggravate the supply situation. An export surplus in conditions of full employment is doubly inflationary, since it increases domestic income on the one hand and decreases domestic supplies on the other. Moreover, more concentration of exports of commodities that are subject to especially strong domestic demand is often enough to increase inflationary pressure at home.

(b) A Wage-price Spiral

The supply situation may be aggravated by yet another factor, namely, a wage-price spiral. Theoretically, wage increases in substandard-wage areas or industries do not necessarily precipitate a race between wages and prices, but in fact demands for wage increases often lead to price increases. A plausible explanation may be found in the general practice of businesses to adjust themselves to cost increases by increasing prices rather than by absorbing them in whole or in part by reducing profits. The highly inelastic nature of demand in a postwar period encourages businesses to raise prices with increasing payrolls and other costs. Wage-price spirals in particular areas or industires serve to spread inflation throughout the whole economy.

The impact of inflation is felt unevenly by different groups of individuals within the national economy.

Generally speaking, inflation redistributes wealth and income in such a way as to hurt consumers, creditors, small investors, and low-income and fixed-income groups; and to benefit businessmen, debtors, and farmers.

According to the assumption associated with Keynes and Fisher, business firms are debtors and gain during inflation by being able to repay debts in depreciated currency. The studies of Alchian and Kessel[8] tend to confirm the Keynes-Fisher mechanism demonstrating the importance for redistribution of debtor-creditor status in an inflation. They took issue with the assumption that all firms are debtors. While this assumption appeared to have been generally true in the pre-World War I period, the Alchian-Kessel samples for post-World War II were evenly distributed between net debtors and net creditors. In each sample examined, the stock prices of debtor companies rose by much larger percentages than those of creditor companies. Bach and Ando's work[9], covering the periods 1939-52 and 1952-54, substantiates that the Alchian and Kessel regarding the operation of the debtor-creditor mechanism.

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[8]Kessel, R.A. & Alchian, A.A.: "Redistribution of Wealth Through Inflation" (Science, Sept. 4, 1959, p. 535-39)

[9]Bach, G.L. & Ando, A.: "The Redistributional Effects of Inflation" (Rev. Econ. Stat., Feb. 1957, p. 1-13)

CHAPTER VI

INNOVATIONS OF DEMAND-PULL INFLATION THEORY

Although Keynes' theory of demand-pull inflation was so valuable for analyzing inflationary pressures, the lack of dynamic development in addition to the appearance of new inflation required modern economists to supplement and to recast his theory. Here this report picks up only some well-known theories which were developed after the publication of Keynes' How to Pay for the War as follows:

(1) Dynamics of Demand-Pull Inflation

Many economists such as Koopman, Smithies, Duesenberry, Holzman, Reder, Simkin, Turvey, and others have developed new analyses which make substantial use of different equations to recast Kaynes' theory in dynamic terms. These analyses were designed primarily to ascertain the determinants of the speed of the inflationary process.

The concept of "lag" is basically necessary for an understanding of the dynamics of inflation. The speed of inflation depends on the significant lags, according to Smithies' analysis.[10] The more lags there are and the greater their length, the slower will be the speed of

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[10]Arthur Smithies: "The Behavior of Money National Income under Inflationary Conditions" (Quarterly Journal of Economics, Vol. 57, Nov. 1942, p. 113-127)

inflation. In Smithies's model of war inflation, there are three lags as follows:

(A) The lag between the initial impact of an increased war expenditure and the establishment of the marginal propensity to save at its normal level. (Please see page 23 of this report) The length of this lag is associated with the income velocity of money, and its length depends in the main on the lag between the earning of profits and their distribution.

(B) The lag between the prices that determine the rate of war expenditure and that expenditure. (Smithies assumes that prices determine the amount of war expenditure.)

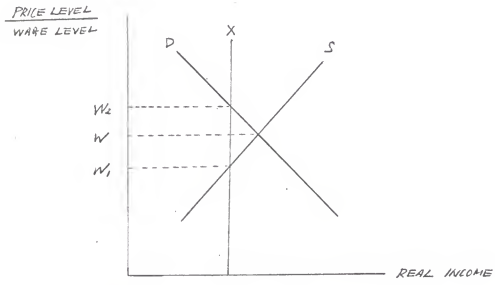
(C) The lag between prices and wages. What ever wage policy is adopted, it is probable that it can only be given effect with some lag; so that wages may depend not on present but on past prices.

(2) Hansen's Dynamic Model in Full-Inflation

Bent Hansen considered the market for productive services (factors) separately from the market for goods. According to Hansen, the excess demand for goods (goods gap) should be measured separately from the factor gap that relates primarily to labor. For a full inflation, there must be both a goods and a factor gap, each involving positive excess demand. If there is a positive goods gap combined with a negative factor gap, for example, the

situation is less an inflation then the consequence of disequilibrium--meaning the overpricing of productive services. Using Figure 5, Hansen illustrates his dynamic model of demand inflation as follows[11]:

Figure 5



(a) The horizontal axis: real national income supplied and demanded.
The vertical axis: the ratio of the price level to the money-wage rate. (i.e. the reciprocal of the real-wage rate).

(b) Curve D: An aggregate demand curve. Its downward slope implies: (a) total labor income varies with real-wage rates; (b) workers'

[11]The original analysis found in B. Hansen's A Study in the Theory of Inflation chapter VII "On Open Inflation: Simple Model" p. 159-188.

marginal propensity to spend is higher than that of profit receivers.

(c) Curve S: A hypothetical aggregate supply curve, hypothetical in the sense of representing what employers would be willing to produce with unlimited supplies of labor. It is drawn conventionally, sloping upward as the real-wage rate falls.

(d) Curve X: This curve intorduces the labor supply as a limitation of the economy's capacity to produce at full employment. After a certain point, it suggests, workers respond to higher real wages by consuming more leisure as well as more goods.

(e) "Goods Gap" and "Factor Gap": The goods gap is measured by (D-X) and the factor gap by (S-X). They are both positive between W_1 (high real wages) and W_2 (low real wage). Just above W_1, the goods gap is large and the factor gaps small; just below W_2, the opposite is the case.

(f) The assumed rates of price inflation and wage inflation:

$\frac{dP}{dt} = fp\ (D-X)$ .....the rate of price inflation

$\frac{dw}{dt} = fw\ (S-X)$ .....the rate of wage inflation

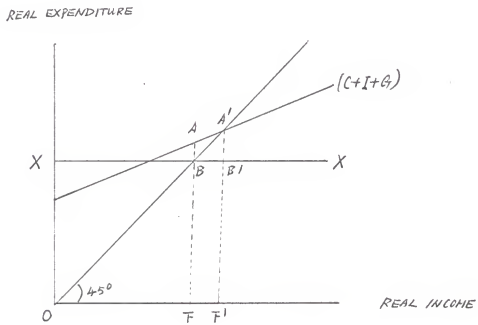
The time rate of change of the price level is a function of the size of the inflationary gap in the goods market, and the time rate of changes of wage is a function of the size of the inflationary gap in the factor market.

(g) Consider a position slightly above W_1. The factor gap is small, so money wages rise slowly. The goods gap is large, so price rises rapidly. This lowers real wages to W. At W, the relative speed of movement is reversed, and real wages rise. Meanwhile, both absolute prices and money wages continue to rise; however, real wages may fluctuate between $\frac{1}{w_1}$ and $\frac{1}{w_2}$. The inflation continues until D shifts to the left, or X shifts to the right.

(3) Bronfenbrenner's "Aggregate Full Employment Real Supply Function"

Many writers, from mercantilist times to the present day, seem to have considered aggregate supply functions as nonvertical even at full employment. Bronfenbrenner used an ordinary "Keynesian cross" to explain this as follows:

Figure 6



(a) OX: aggregate capacity at full employment in the prices of the beginning of the period.

(b) OF: full-employment income in the same units.

(c) C+I+G = aggregate expenditure curve
= aggregate demand curve

(d) AB: If desired expenditures at OF exceed aggregate capacity OX, AB may be called an inflationary gap.

(e) $A'B' = AB \cdot \frac{I}{I-c}$

($\frac{I}{I-c}$ is the standard multiplier, where c represents the marginal propensity to spend on domestic goods.)

(f) The degree of inflation varies directly with

$\frac{AB}{OF}$ and $\frac{A'B'}{OF'}$

A cut of AB in aggregate expenditure through a reduction of government expenditure, an increase in taxes, or a decrease in the money supply presumably eliminates the inflationary pressure.

(g) If the aggregate supply functions are non-vertical even at full employment, the capacity functions (like curve XX) will be nonhorizontal even when the degree of involuntary unemployment is constant at a low level.

Bronfenbrenner in his "The High Cost of Economic Development"[12] adopted a nonhorizontal capacity function, but drew it rising to a maximum and subsequently falling as the following figure 7.

(a) Curve X = aggregate full employment real supply function.
Curve X replaces the horizontal curve XX in Figure 6.

(b) 45° line represents the aggregate money supply function at varying employment levels.

(c) OF = Anticipated full-employment income level.
OX_1 = real full-employment output.

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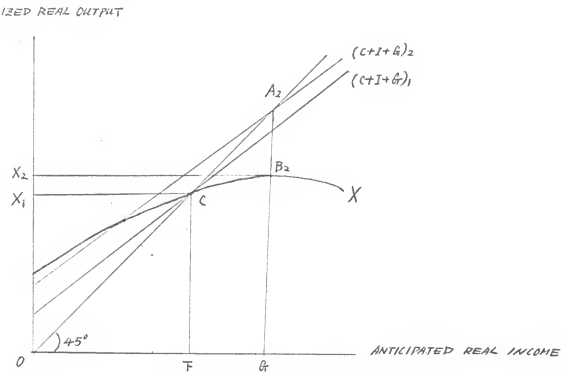
[12]Martin Bronfenbrenner: "The High Cost of Economic Development" (Land Economics vol. 29, August 1953, p. 209-218)

Figure 7



(d) The curve X reaches a maximum real output OX_2 and then turns downward.[13] The corresponding money income level G is normally at the right of F.

(e) If the society's expenditure curve is $(C+I+G)_1$, there is no inflationary gap and presumably no inflation, while real output is at OX_1.

(f) If the expenditure curve is increased to $(C+I+G)_2$, as by easy monetary or fiscal

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[13]Patinkin was among the earlier postwar writers to use an upward-sloping capacity function under the explicit assumption of full employment. He pictures X curve as a straight line with a small upward slope. See Don Patinkin: "Involuntary Unemployment and the Keynesian Supply Function" (Economic Journal vol. 59, Sept. 1949, p. 360-83)

policy, an inflation gap of $\frac{A2B2}{M}$ develops, where M is the standard multiplier $\frac{I}{(I-C)}$. At the same time, real output rises to OX_2, largely as a consequence of money illusion.

(4) Schultze's "Demand-Shift Inflation" (or Sectoral Inflation)

Prices rise in consequence of increased demand or cost but do not fall in response to decreased demand or cost. Likewise, wages rise in response to increases in living costs or in business profits, but do not fall when living costs or business profits decline. The result of this one-way flexibility is that shifts in demand have inflationary effects, raising prices and wages in sectors to which demand shifts, but leaving them substantially unchanged in sectors from which demand shifts. This upward bias in the price level is called "sectoral" or "demand-shift inflation."

This is a hybrid theory of demand-shift and cost-push developed by Charles L. Schultze in 1959.[14] He analyzes the inflation in the United States during 1955-1957. His theory is supported in the "Staff Report" of the Joint Economic Committee on Employment, Growth, and Price Levels, also known as the "Eckstein Report."

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[14]Charles L. Schultze presents the theory of sectoral inflation in his "Recent Inflation in the United States" (Printed for the use of the Joint Economic Committee, United States Government Printing Office, Washington, 1959).

CHAPTER VII

CONCLUSION

The analysis of demand-pull inflation was constructed systematically by Keynes based on his principle of effective demand. Doubtless, this great contribution will be a monumental work in the history of economic thought.

Economic theories are always born of economic experience. In Keynes' time almost all inflations had been apparently associated with demand-pull conditions such as wars and political upheavals, and cost-push theories did not become prevalent until the creeping inflation of the late 1950's, when demand-pull elements were less evident in the United States. It is necessary to develop a new way of analysis which can match a new economic phenomenon though the basic principle may be kept the same. In this sense, we can say Keynes' theory of inflation is a classical theory. But he is the first economist who developed systematic tools to explain inflationary pressure. Rarely is inflation discussed without drawing on Keynes' gap theory.

The classical school separated the theory of value and distribution on the one hand, and the theory of money and prices on the other. Such a division was based on the traditional quantity theory of money which assumed that changes in quantity of money were neutral so far as output and employment were concerned. The foundation of Keynes' A Tract on Monetary Reform (1923) was such a classical theory.

A Treatise on Money (1930) was a trasitional writing to the General Theory. When he was writing this book he "was still moving along the traditional lines of regarding the influence of money as something so to speak separate from the general theory of supply and demand."[15] But when it was finished he "had made some progress towards pushing monetary theory back to becoming a theory of output as a whole."[15]

In the General Theory, Keynes endeavored to integrate the theory of value and the theory of money by having both operate through aggregate demand. The effects of money on prices or output are traced out through influences of money on the interest rate, investment, and aggregate demand. Variations in output and price level are explained in terms of changes in aggregate demand and supply relationship. He also integrated the theory of income into a somewhat more general theoretical structure in which income, output, employment, consumption, investment, saving, money supplies, interest rate, and price levels enter as variables in an interdependent system. These two integrations are namely Keynes' most important contributions to the theory of money and prices.

Although Keynes devoted his energies in analyzing the circumstances of less than full employment and did not pay too much attention to the situation of more than full employment in his General Theory, he used the same principle and

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[15]Keynes: The General Theory Preface p. vi.

tools in the analysis of inflation in his How to Pay for the War. Here his contribution to the theory of prices came to a climax and the theory of demand-pull inflation reached the stage of maturity. In this pamphlet he suggested the need of compulsory saving in a plan for war finance to hold down aggregate demand and cut inflation.

Generally speaking, Keynes' theory is very useful for an analysis of the statics but not for long-run dynamics, even though his principle of effective demand has made a great contribution to the analysis of inflation and modern macroeconomics. This is because his General Theory states that the propensity to consume, marginal efficiency of capital, and interest rate determine income and employment, assuming population, technology, existing volume of capital, and the social system of distribution are constant. Nevertheless, Keynes' theory of effective demand, which has taken the place of "Say' Law of Markets," has opened the door of economic dynamics for the economists after Keynes.

So far as inflation theory is concerned, Keynes' gap analysis is static. This causes the later economists such as Smithies, Hansen, Bronfenbrenner, and Schultze to attempt to supplement his theory.

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KEYNES'S THEORY AND INFLATION

by

MING-TANG LIN

B. A. Nihon University, Tokyo, Japan, 1959

M. A. Waseda University, Tokyo, Japan, 1961

AN ABSTRACT OF A MASTER'S REPORT

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KANSAS STATE UNIVERSITY
Manhattan, Kansas

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Keynes' theory of inflation is in essence a demand-pull inflation theory. According to Keynes' analysis, inflation is caused by further increases in effective demand after full employment is attained. Prices rise because the elasticity of output in response to increases in effective demand is zero. He uses tools which are developed in his General Theory, such as marginal propensity to consume, marginal efficiency of capital, and interest rate to analyze factors affecting aggregate demand and the influence of money on these factors. An increase in the total quantity of money first lower the interest rate. The lower interest rate then increases the inducement to invest, and an increase in investment, according to the principle of multiplier, will lead to a still greater increase in income. If full employment exists, real income cannot increase at the same time, and an increase in money income therefore causes a rise of prices. If full employment does not exist increases in effective demand, whether stimulated by increase in the quantity of money or in some other way, do not necessarily lead to inflationary price rises. Instead, increase in employment and output may occur.

The principle of effective demand can be applied to analyze both wartime and postwar inflations. Theoretically, inflation is not different in wartime from postwar period except wartime inflation involves greater pressures. At postwar period,

government expenditure falls precipitously while private consumption and private investment rise sharply.

Keynes' major contributions to the theory of money and prices are:

(1) He endeavored to integrate the theory of value and the theory of money by having both operate through aggregate demand. The effects of money on prices or output are traced out through influences of money of the interest rate, investment, and aggregate demand. Variations in output and price level are explained in terms of changes in aggregate demand and supply relationship. He utilized the concept of elasticity in both the theory of money and the theory of value to express these relationships.

(2) He also integrated the theory of income into a more general structure in which income, output, employment, consumption, saving, money supplies, interest rate, investment and price levels enter into an interdependent system.

Generally speaking, Keynes' theory is very useful for an analysis of the statics but not for long-run dynamics, because his General Theory analyzes the influence of variables such as marginal propensity to consume, marginal efficiency of capital, and interest rate on income and employment under assumed conditions of a given population, technology, and the distribution of income. The lack of dynamic development in Keynes' economics has led later economists such as A. Smithies, B. Hansen, M. Bronfenbrenner and C. L. Schultze to supplement his theory.