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John Maynard Keynes and
Joseph A. Schumpeter
A Description and Comparison
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CLAYTON CLYDE CURTIS

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THE ECONOMICS OF JOHN MAYNARD KEYNES AND JOSEPH A. SCHUMPETER
A DESCRIPTION AND COMPARISON

by
Clayton Clyde Curtis

A THESIS

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The Author

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CHAPTER I

KEYNES: A SUMMARY

Before we begin our brief summary of the Keynesian system, it would be well to outline the purpose of this chapter. Our ultimate purpose, as the title indicates, is to conduct a comparison of the economic systems propounded by Lord Keynes and Joseph Schumpeter respectively. The comparison will be carried out on two levels. We intend first to consider similarities, if they exist, between fundamental components of each system, i.e. the nature of capital, etc. Secondly, we shall endeavor to decide what both systems in their entirety have in common; that is to say, are the two authors answering the same general questions; are the systems they have erected mutually or partially substitutable, etc?

It is with the idea of providing some basis for this latter, the comparison of the complete systems, that this chapter and chapter two have been written. In summarizing both systems the attempt has been made to simply condense and record, as objectively as possible, the actual work of these two men. This has left the summaries open to the inevitable errors of selection and interpretation for which the author assumes full responsibility. In general, the

material used is that embodied in The General Theory, but the reader will note that a great deal of the work contained in that volume, especially in the last half, is not considered. Moreover, we shall jump immediately into our discussion without the usual considerations of the classical position, in objection to which the book was written.¹ Two reasons are advanced for the position thus taken: (1) In regard to the omission of the later half of Keynes's work, it is concerned either with the applications of the approach, consistent with the system advanced, or a more detailed exposition of principles explained earlier in the text.² As such, it is not essential to a summary of the system. Moreover, the material presented in this portion of the book is precisely of the nature which we wish to use in the overall comparison of the two men, and so we shall relegate its discussion to the later part of this thesis. (2) The relation of Keynesian theory to classical is omitted because we are not attempting

1. The first two chapters of The General Theory are so devoted. D. Dillard's The Economics of John Maynard Keynes, and L. Klein's The Keynesian Revolution, also follow the same pattern. For divergent opinions on the question of Keynes and the classicists, see selections by Seymour Harris (Chap. VI), Wassely Leontief (Chap. XIX), and R. F. Harrod (Chap. XLI) in The New Economics.

2. Chapter 22, Notes on the Trade Cycle, is given as an example of what is meant by application, while Chapter 17, The Essential Properties of Interest and Money, is an example of further exposition of a principle already stated in Chapter 13. By the last half, is meant those from Chapter 14 on, with the possible exception of Chapter 15. All chapters cited refer to The General Theory of Employment, Interest & Money.

to place Keynes in historical perspective, nor are we concerned with the numerous arguments over the correctness of his work or its real originality. For our purposes, the system is considered as a de facto accomplishment which we accept, and any discussions or exceptions we wish to take will be relegated to footnotes. Since the foundations, i.e. the circular flow, of Schumpeter's system, might properly be termed classical, we shall be able to work many of Keynes's objections into our discussion of the components of each system. This aspect of the problem, then, shall in reality not be completely neglected.

With the ground thus cleared, we have arrived at the point where we may begin the discussion of Keynes.

THE THEORY OF EFFECTIVE DEMAND

If we were to pick one concept that summarized the Keynesian System it would be that of effective demand.³ The Keynesian problem was to construct a theory of the determination of the level of output, and the solution may be stated in the concept of effective demand.⁴ Now, while

3. L. R. Klein in The Keynesian Revolution has characterized the theory of effective demand as Keynes's revolutionary contribution to theory (p. 56). For an excellent summary of the various opinions on Keynes's real revolutionary contribution, the reader is referred to Chapter VI in The New Economics.

4. The term, "effective demand", is not original with Keynes, but he has given it a new meaning; for example, see Knut Wicksell's Lectures on Political Economy, p. 19. Here the term is used to differentiate between mere desire to buy and ability to buy. L. R. Klein, *Ibid.*, p. 126, notes that Malthus used effective demand in the Keynesian sense but had no clear idea of its determination.

this is a true statement, and indeed a truism, it is in and of itself uninteresting, and we shall need to discover the determinants of effective demand itself before we shall have progressed very far. For the moment, however, let us return to effective demand.

If we consider a simple entrepreneur, we are familiar with the classical principle that he will attempt to maximize his profits by expanding his output to the point where the cost of producing an extra unit is just covered by the proceeds from that unit's sale. With Keynes, however, we are concerned always with aggregates, so that instead of considering one entrepreneur we shall consider all at the same time. Since the behavior of all is assumed to be similar, we shall not have damaged the conclusions applicable to the single firm at all, but rather we shall have succeeded in discovering what happens to total output and employment with variations in entrepreneurial decisions.

Now, since employment varies directly with output,⁵ it follows that, ce teras paribus, employment will depend on what level of output entrepreneurs in the aggregate expect will maximize their profits.⁶ In terms of aggregate

5. When we speak of an increase or decrease in either income, employment, or output, we shall assume that all three move in the same direction at approximately the same rate. That this is Keynes's own assumption, the reader may verify by consulting The General Theory, p. 90.

6. This argument and the following paragraph draws heavily on J. M. Keynes, The General Theory of Employment, Interest & Money, Chapter 3.

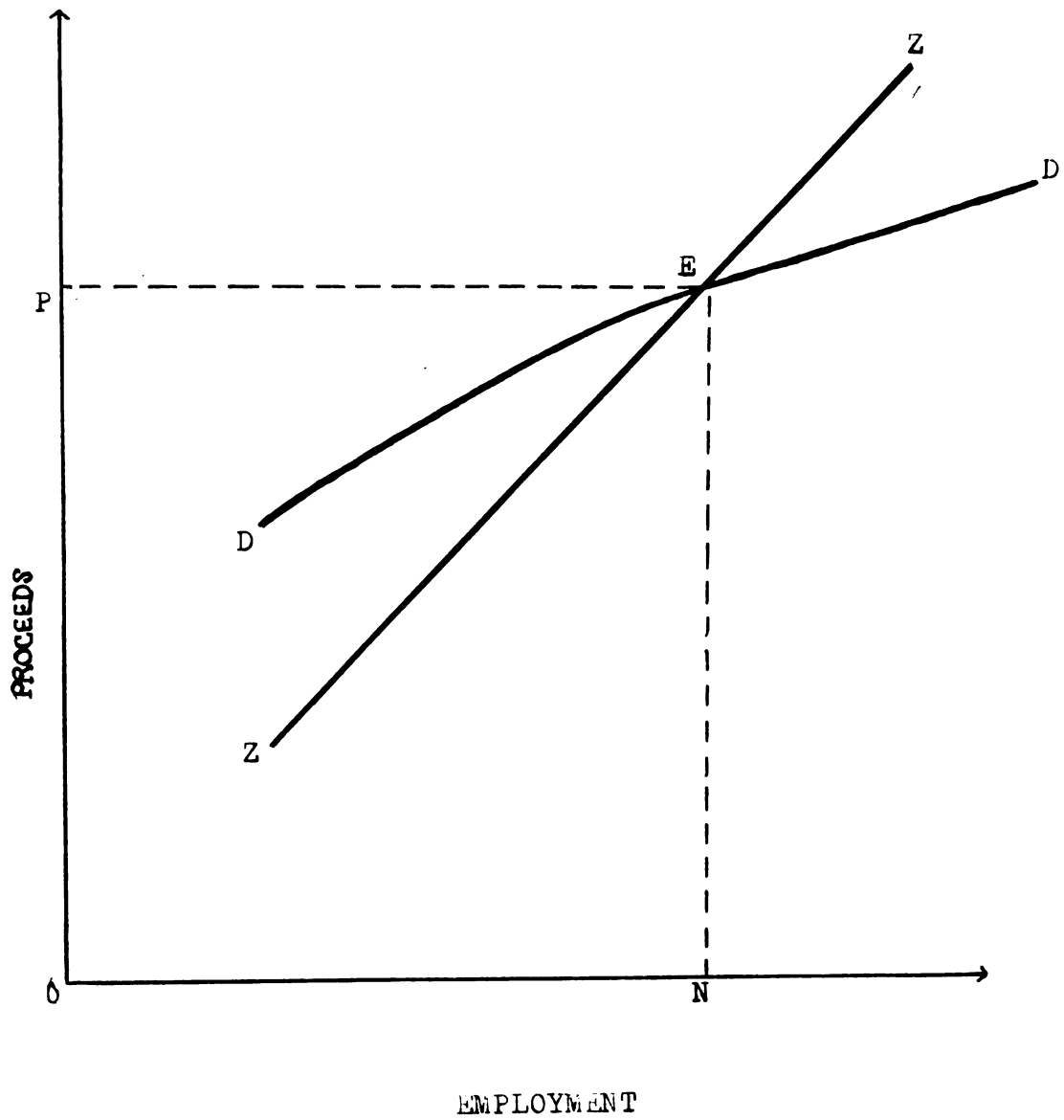
functional relationships, our product will have as a minimum supply price (Z) the cost of employing the number of men (N) necessary to turn out that output. Thus, $Z = \phi(N)$, and this is Keynes's Aggregate Supply Function. On the other hand the entrepreneur expects, by employing a certain number of men (N) to receive in sales D amount of income.⁷ Thus, $D = f(N)$, and we have Keynes's Aggregate Demand Function.

From these two functions we may easily construct schedules for each and arrive at our solution graphically. Thus, for the demand schedule we may construct a series of expected receipts coincident with a series of various amounts of employment. Now since greater amounts of employment will produce greater outputs, and consequently greater anticipated returns, the demand curve derived from this schedule will slope upward and to the right.⁸ In figure one we have represented this curve with line DD .

7. This is income both to the entrepreneur and his factors, because it is the entire proceeds from sales, the gross sales in the language of the business man. In another sense, however, this income is net, for from it have been subtracted the amounts paid to other entrepreneurs, and the sacrifice incurred by using the equipment instead of letting it remain idle. In short, this is income net of user cost. For a fuller explanation of user cost, the reader is referred to Chapter 3 and 6 of The General Theory.

8. The curve will not, however, be a straight line, because with greater amounts of employment, diminishing marginal productivity will result in smaller relative output per worker employed, causing the demand curve DD to bend down to the right as N increases. It might also be argued that since this is expected proceeds, the bending is a result of the entrepreneur's familiarity with the old law of supply and demand, i.e.

FIGURE I



Similarly, for the supply schedule we may take a series of receipts and the coincident series of amounts of employment which would just be induced by these receipts. This curve, too, would slope upward and to the right, since as a greater number of workers are employed, the proceeds necessary to cover their added costs also increase. This is the curve ZZ in Figure 1. The supply curve does not exhibit the same bending as the demand curve, however, and the difference is fundamental to the Keynesian System.

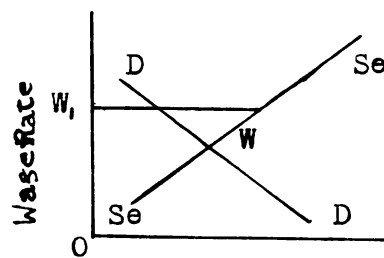
A full explanation is provided below,⁹ but to continue our discussion, these two curves will intersect at some point (E) representing an amount of proceeds(OP) and employment(ON). In the aggregate sense, this is a point of profit maximization, i.e. at any point to the left of E, expected receipts exceed the minimum necessary to induce that volume of employment, and expanding employment would increase receipts, while at any point to the right of E, the reverse is true. E is the point

a greater supply will mean lower price. However, unless we wish to introduce imperfect competition at this point (and we don't), we should remember that the individual entrepreneur cannot alter price by varying his output, and we are left with diminishing marginal productivity as the answer.

9. The crux of the matter lies in the now famed Keynesian wage rigidity. Briefly, using familiar tools, the supply of and demand for labor should establish a wage that would equate the two at W. The real world, however, displays a disconcerting refusal to conform to such a neat solution. Instead, because of various institutional factors, (see pp. 266-269 of The General Theory) workers will not accept

of effective demand, and it is also an equilibrium position. From the point of view of employment, however, it is an indeterminate equilibrium, since we have no way of knowing whether N equals full employment. We have thus arrived at a theory of output and employment determination, i.e. the equilibrium of aggregate supply and demand. Unfortunately, however, we have not yet penetrated the veil but only identified it. We are now ready to draw that veil and discover what lays behind it.

employment at less than the wage inelastic rate, in money



Q of Employment

terms OW_1 , for various levels of employment. Thus, increases in N will result in constant proportionate increases in costs, or from the other side of the fence, the proceeds necessary to just cover these costs increases directly with N , and our supply curve (ZZ in Figure 1) is a straight line. The classical system supposed these two curves to be coincident, so that while N in the Keynesian system need not be at full employment, in the classical system it was of necessity. Theoretically, wage cuts are capable of producing full employment under both classical and Keynesian analysis of these two curves if the effects on income, demand, the rate of interest and investment are neglected, which according to Keynes, is what the classicists did.

THE CONSUMPTION FUNCTION

We have discovered at this point that there are two separate functions, i.e. aggregate demand and aggregate supply, which must be dissected and their parts examined if we are to obtain a knowledge of the mechanism that controls each. The first (aggregate supply) we shall dispose of with a quote lifted directly from Lord Keynes:

"The aggregate supply function...depends in the main on the physical conditions of supply (and), involves few considerations which are not already familiar."¹⁰

We have already discovered that aggregate demand relates demand and employment ($D = f(N)$) to various levels of expected proceeds.¹¹ We have now to ask, what are the components of these expected proceeds? The answer is obvious even before one has read Keynes--producers sell only two kinds of goods: those intended for consumption and those which we call producers' goods.¹² We shall consider first the role

10. J. M. Keynes, The General Theory, p. 89. The aggregate supply function has already received some discussion in this thesis (see p. 5, footnote 8). Keynes discusses this function more fully in Chapter 20 (The General Theory) where the employment function is considered. We shall, ourselves, be considering it in the later chapter in this work when we are comparing Keynes and Schumpeter. It is not unimportant, but the greater part of Keynes work is devoted to explaining the demand function.

11. See pp. 4 & 5 above.

12. We recognize that any distinct line between the two is of necessity arbitrary, but this does not destroy the idea. Producers' goods may also be called capital goods, means of production, or, as Keynes does, investment goods.

of consumption, because it is the least interesting and relatively the least important.

Now since aggregate demand is a function of employment (N), that part of aggregate demand which is consumption must also be a function of N. Our aim, however, is to discover what factors govern the amount that is spent for consumption. In other words we now must look not at the producer's decisions but at the man who is buying the goods--the income holder. Since every level of employment (N) has a corresponding level of income (Y), we may quite easily change our function to read: consumption is a function of income.¹³

$$C = f(Y)$$

This functional relation provides the basis for our next important concept, the propensity to consume.¹⁴

13. This completely interchangeable character of N and Y is open to the objection that for all distributions of employment it will not hold. For example, if a certain employment (N) is distributed heavily in those industries, firms, etc., which use a large amount of labor and a small amount of capital, Y will be lower than those industries where the reverse is true, because the marginal productivity of labor in the latter case will be higher generally. However, says Keynes, (p. 90 of The General Theory) this money income alone would not enable the income recipient to buy more consumption goods.

14. L. R. Klein, *Ibid.*, p. 59. Klein adds the rate of interest (i) to the function so $C = f(Y, i)$, but admits that the interest rate probably has a negligible effect on consumption. Keynes includes the interest rate in his objective factors determining the propensity to consume, and advances similar reasons as to why it is negligible, but he does not include it (i) in his functional equation.

For every level of income (Y) there is a propensity to spend a specific part of that income (C) on consumption.

What then are the factors which determine what this propensity will be? Roughly they are divided into three groups by Keynes: (1) the level of income, (2) other objective circumstances and (3) the subjective habits of the community regarding the disposition of their income.¹⁵

The third group, the subjective habits, are assumed to be fixed by custom, convention, etc., and so may be assumed to be given at least in the short run. The objective circumstances which include such factors as windfall profits and fiscal policies are negligible in their effect though a gain in the short run. Since these two determinants are neither relatively fixed or negligible, we may assume that the propensity to consume is a relatively stable function.

Now since these two factors assure us of the stability of the propensity to consume, we must turn to our remaining variable, i.e. income, to answer the question of how changes in amounts of consumption come about. We are confronted at this point with what Keynes has called

"The fundamental psychological law, upon which we are entitled to depend with great confidence both a priori (and)...from the detailed facts of experience..."¹⁶

15. See The General Theory, p. 91, for a list of these factors.

16. The General Theory, p. 96.

This fundamental law is that as income increases, consumption also increases, but by less than income. Stated another way, the marginal propensity to consume is positive and less than unity.¹⁷ The shape of the consumption function is thus determined and may be represented graphically as in Figure 2.

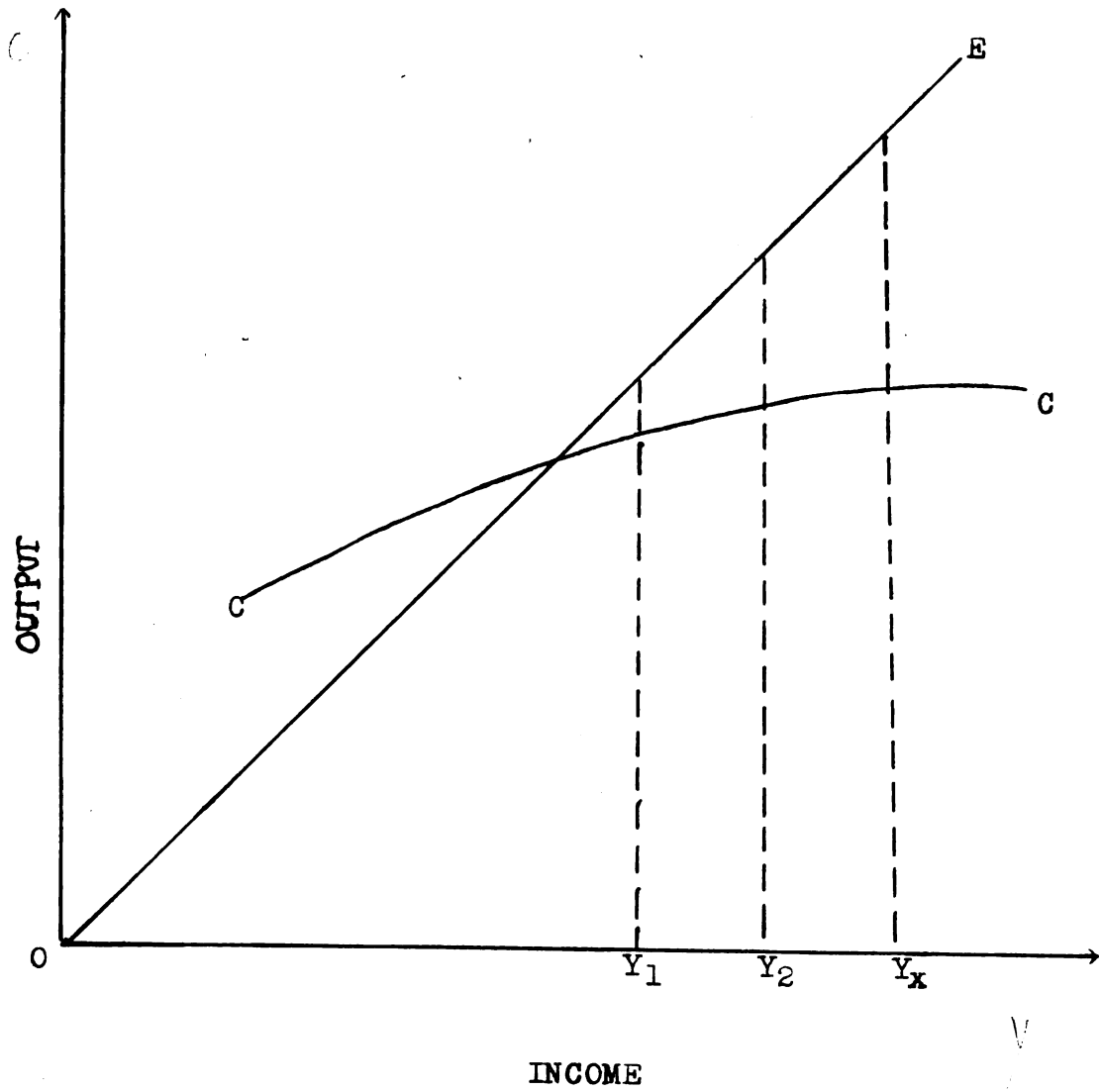
Since income and output are, as we have shown above, equal for all amounts, we may represent the relation between income on the horizontal axis and output on the vertical axis by a 45° line (OE) from the origin. The consumption function (CC) following the shape just outlined, increases with income, but by less than the amount of the increase in income.¹⁸

It would be well to note at this point a resultant feature of the consumption curve having this particular shape. We can see very clearly from Figure 2 that as income increases, say from Y_1 to Y_2 to Y_x , the distance between the income line (OE) and consumption (CC) grows larger and larger. This vertical distance, which is continually increasing with additions to income, is the famed "investment gap", of paramount importance when we are talking of maintaining specific levels of

17. The marginal propensity to consume, unlike the average propensity, is not stable but varies with income changes, decreasing as income increases because a smaller absolute amount of increments to income is spent on consumption. For an excellent explanation of this the reader is referred to D. Dillard, Ibid., pp. 76 to 79.

18. Some empirical attempts have been made to verify this theoretical shape of the consumption functions: see R. Ruggles, National Income and Income Analysis, pp. 238 and 239.

FIGURE 2



income and/or employment. We shall reserve our discussion of the so-called gap until a later point in this thesis, but it would be well to note in passing that it derives its nature from the fundamental shape of the consumption curve derived from our "fundamental psychological law".¹⁹

At this point in our summary of Lord Keynes, we have completed our examination of part of aggregate demand (consumption), and we are ready to turn our attention to investment. Before we leave the consumption function, however, we shall consider briefly the concept of the multiplier, since it is a derivative of the marginal propensity to consume.

THE MULTIPLIER

We have mentioned changes in income, but to date we have avoided any mention of the mechanism by which such

No conclusive results have been obtained, as is usually the case when empirical data is used to validate a theoretical structure, but generally Keynes's proposition at the very least seems reasonable.

19. It might be well before we leave our discussion of the consumption function to clear up what might appear to be a contradiction, i.e. although we have called consumption a stable function, Figure 2 clearly shows that it rapidly becomes a smaller part of income as that variable increases. The answer lies in the difference between the average propensity and any absolute income-consumption combination. That is, if the average propensity is .8 at an income of 100, then 80 would be spent for consumption and 20 would be saved, while at an income of say 200, 160 would be spent on consumption and 40 would be saved with the same propensity(.8). Thus the propensity itself does not change, but the absolute amounts it represents show a wide variance with changes in income.

changes take place. Generally income is generated by two types of spending: that out of the present level of income, which in equilibrium perpetuates itself, and that spending not out of income. It is the latter in which we are interested and we shall call it injections. Our problem is to determine what effect an injection will have on the level of income.²⁰

If we consider the effect of putting new income in the hands of an individual, we can see quite easily that it will be spent, becoming income for someone else who in turn will spend it and so on.²¹

To determine the limit of the rise in income that the new expenditure will produce, we need to make use of a concept developed briefly in an earlier part of this work: namely, the marginal propensity to consume.²² The marginal propen-

20. Injections is preferred by the present writer over investment or net investment, because it is more inclusive, including such expenditures as war and relief expenditures. See The New Economics, p. 482.

21. Economists had been aware of this for some time, but had been unable to work out any real answer either as to exactly how or how much, until R. F. Kahn in "The Relation of Home Investment to Unemployment", Economic Journal, Vol. XLI, 1931, p. 173, worked out the theory of the multiplier theory in a theory of income-output determination, since his prime concern was to determine the effects of public works projects on income.

22. See p. 12n above. This marginal propensity is used as an aggregate average of everyone's marginal propensity to consume.

sity to consume tells us what fraction of an increment of income will be spent on consumption. It is this fraction in which we are interested, for the remainder which is saved is obviously not spent, and so does not become income.

Now the first recipient of the new income will therefore pass on that fraction of it (the new income) represented by his marginal propensity to consume, and the next man will do the same, so that the income will continuously become smaller each time by the amount saved until it becomes negligible.²³

This is the way in which the multiplier works in practice, but we may also derive it mathematically as follows:

From our "fundamental psychological law", we know that the marginal propensity to consume $\frac{\Delta C}{\Delta Y}$ is always positive and less than one. Let us assume that $\frac{\Delta C}{\Delta Y}$ is less than one by a fraction $\frac{1}{K}$ where K equals the multiplier. We know income equals consumption plus investment, so:

$$(1) \Delta Y = \Delta C + \Delta I;$$

$$(2) 1 = \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y},$$

$$\text{or } (3) 1 = \frac{\Delta C}{\Delta Y} + \frac{\Delta I}{\Delta Y},$$

dividing by ΔY ,

since both $\frac{1}{K}$ and $\frac{\Delta I}{\Delta Y}$

have been defined as the

residual after consumption;

23. For a completely detailed arithmetical example of the working of the multiplier, the reader is referred to L. V. Chandler, The Economics of Money and Banking, p. 59. For our purposes, however, we are interested only in explaining its nature and deriving it mathematically.

$$(4) \frac{1}{K} = 1 - \frac{\Delta C}{\Delta Y},$$

$$(5) K = \frac{1}{1 - \frac{\Delta C}{\Delta Y}},$$

transposing;

multiplying by K and

then by $\frac{1}{1 - \frac{\Delta C}{\Delta Y}}$.

The multiplier then is the reciprocal of one minus the marginal propensity to consume $\frac{\Delta C}{\Delta Y}$, thus if $\frac{\Delta C}{\Delta Y}$ is $\frac{4}{5}$, the multiplier is 5; if $\frac{\Delta C}{\Delta Y}$ is $\frac{1}{2}$, the multiplier is 2, etc. If the economy is subjected to an injection of new money, the level of income will be raised by some multiple of that injection, determined by the principle worked out above.²⁴

We shall use this principle when we assemble the Keynesian machine and watch it operate. For the moment, however, we shall pass on to the discussion of the remaining component of aggregate demand--investment.

INVESTMENT AND SAVINGS

As we have shown, consumption which constitutes one part of aggregate demand is a relatively stable function. We now turn our attention to the other part of that demand, and we shall note immediately that in contrast to consumption it is extremely volatile. For example, to use actual figures, investment in the United States dropped in the three years, from 1929 to 1932, from 15.8 billion dollars to 0.9 billion, or one fifteenth of its 1929 level and within the next three

24. If the new income level is to be maintained, the injections must be continuous, else they will quickly disappear in leakages, i.e. savings, debt, retirement, etc.

years rose by more than six times its size in 1932 to six and one tenths in 1935. Consumption for the same period, while exhibiting fluctuations, at no time dropped by even one half its twenty nine level.²⁵

It will be obvious that the motivating variable in our determination of a theory of employment or output must be investment, as soon as we have cleared up one more point.

We have spoken, in earlier sections of this work, of that part of income which is left after consumption as being both investment and savings, and indeed it is both.

That is,

$$Y = C + S,$$

and

$$Y = C + I,$$

so

$$S = I.$$

The equality of savings and investment which we have just demonstrated mathematically is, however, more than a mere identity in the hands of Keynes.²⁶ Their equality is

25. L. V. Chandler, Ibid. Figures are taken from a table of G. N. P. presented on page 630.

26. The literature was filled with discussions of this equality for years. The most widely accepted ways of squaring this proposition with reality or actually with statistics which record only what has already happened, is the period analysis of D. H. Robertson, and the ex-post-ex-ante analysis of the Swedish School, both of which say essentially that S and I need not be identical at any one moment, but that by looking backward after the period has

a condition of equilibrium, but unlike theory before Keynes which held this equilibrium to be one of full employment. Keynesian level of employment may be a large number of points between a "basic" income of only consumption spending and full employment. The difference lies in Keynes's view of savings. In the words of the master himself,

"Saving...is a mere residual."²⁷

That is to say, in terms of a function, savings is determined by income, $(S = f(Y))$,²⁸ and to continue,

"The decisions to consume and the decisions to invest between them determine income."²⁹

These relations may be illustrated graphically as in Figure 3. Savings (SS), as we have said, increase with

run its course and equilibrium has been reached, one may see that they are equal. It is the author's belief, however, that it is possible to prove S and I are always equal at any moment of time. Suppose at any moment of time a new injection is made by investment, but precisely because it is new there are no consumption goods for the new income to be spent on. Thus there is no increase in real consumption, but income increases. For the moment, the marginal propensity to consume is zero, and the new investment is completely saved. Should consumers spend on the available goods at higher prices, this would still leave savings albeit forced equal to investment. As consumption goods come on the market, the money spent on them will create income, maintaining the equality by raising income (the foregoing argument, with some additions, is substantially that presented by D. Dillard, *Ibid.*, p. 89.)

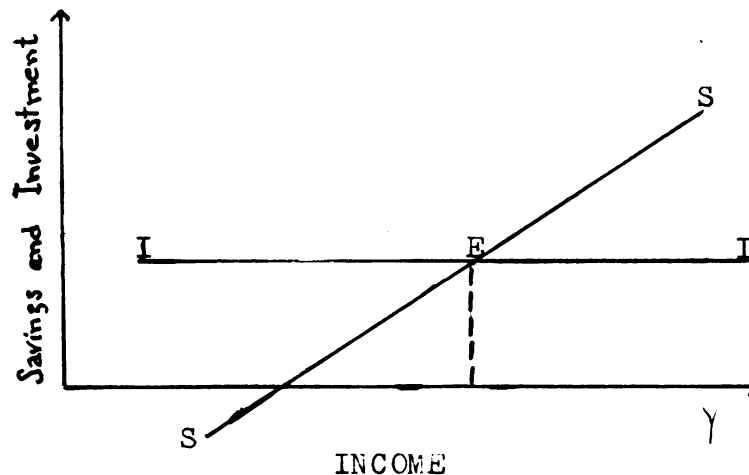
27. The General Theory, p. 64.

28. In contrast, the classicists held savings to be a function of the rate of interest, $(S=f(i))$.

29. The General Theory, p. 64.

income, while investment (II) is autonomous, at least as regards income. The only income possible with these curves

FIGURE 3



is that at E, where savings equal investment. It is obvious from the diagram that changes in income must come in changes in the investment schedule (II).

We have eliminated savings, and so, if we are to proceed, we must discover what it is that determines investment. There are, in general, two major factors which govern investment: (1) the marginal efficiency of capital and (2) the rate of interest. We shall consider them in the order named.

The marginal efficiency of capital is defined as

"...that rate of discount which would make the present value of the series of annuities given by the returns expected from the capital-asset during its life just equal to its supply price."³⁰

30. The General Theory, p. 135.

Three things are important within this definition:

- (1) the rate of discount, (2) the expected returns and
- (3) the supply.

(1) The rate of discount is simply the procedure used to calculate the rate of earnings for an asset over a period of years, in exactly the same way that yield is calculated on money. Thus, if an asset costing \$100 yielded \$10 in returns, i.e. in the product it produced etc., then it would be said to have a yield of 10%, or the rate of discount that would give the original price is 10%. The discount rate over a series of periods may be measured by the well-known formula,

$$\text{Original Price} = \frac{Q_1}{(1+r_m)} + \frac{Q_2}{(1+r_m)^2} + \dots + \frac{Q_n}{(1+r_m)^n},$$

where Q is the earning for the period and r_m is the rate of discount, in our case the marginal efficiency of capital.

(2) In a static society all the Q 's would be equal, but in Keynes's they are not, because the yields are not those produced in a system where future uncertainty does not exist and returns are self-perpetuating. The yields which make up the marginal efficiency of capital exist only in the minds of the entrepreneur who is faced with all the vague uncertainty of the real world. They are his estimate of prospective yields in the future and are actually nothing more nor less than a guess.³¹

31. Since present earnings are the only secure footing the business man has for making predictions, these expectations of future yields will be a function of present earnings and such powers of prognostication good or bad as he possesses.

(3) The final factor with which we must deal is the supply price. Briefly stated, it is the price at which a new capital asset may be purchased in the market.

Assembling the parts, we come out the same door as in we went: the marginal efficiency of capital is the rate of discount that will just make expected yields equal to supply price. In terms of the formula mentioned above,

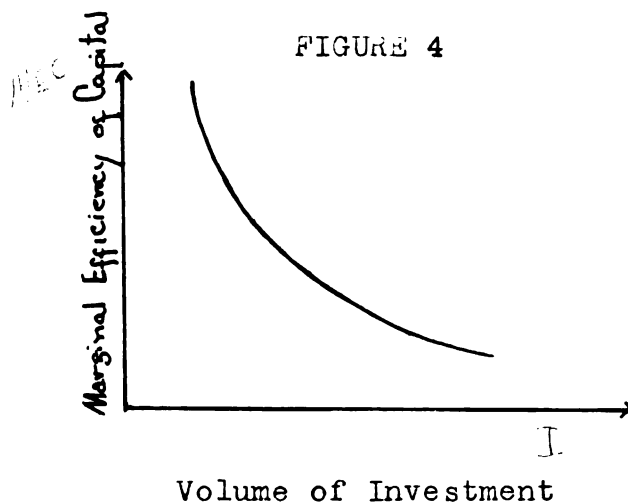
$$\text{Supply Price} = \frac{Q_1}{(1+r_m)} + \frac{Q_2}{(1+r_m)^2} \dots \frac{Q_n}{(1+r_m)^n} .$$

Changes in the marginal efficiency schedule may be brought about by either or both of the last two factors. That is, supply price may go up or down depending on the market demand for capital assets. On the other hand, the entrepreneur's expectations may be changed up or down by any number of psychological factors, such as elections, depressions, fears, etc.

Expectations may also diminish as a result of the diminishing marginal productivity of capital assets as the entire stock of capital increases.³²

We may represent the marginal efficiency of capital graphically (Figure 4) as below, where we see that with an increasing volume of investment, marginal efficiency of capital falls because of diminishing marginal productivity, as explained above.

32. This is one of the reasons advanced when a theory of mature or stagnant economics is propounded.



The elasticity of the schedule will be important when we come to discuss effects of changes in the rate of interest, but for now we shall pass on to the discussion of that rate.

As a point of departure for our discussion of the theory of interest, we might well start by stating what interest is not. Interest traditionally has been regarded as the reward for abstaining from present consumption--for waiting.³³ In the Keynesian system, however, interest is a monetary phenomenon; it is the price established by the demand and supply of money. People prefer money because of its perfect liquidity compared to other assets, which makes it "a link between the present and the future."³⁴ This demand for liquidity may be broken down into three main motives:

33. Interest as a reward for waiting is consistent with full employment, where any increase in investment must be at the expense of consumption, and vice versa.

34. The General Theory, p. 293.

(1) The Transactions Motive - That part of the money supply which must be held to satisfy the everyday business needs of the community. This motive is a function of income, varying directly with it.

(2) Precautionary Motive - That money held for emergencies, such as illness and unforeseen accident, etc. This motive has its roots in the uncertainty of the future.

(3) The Speculative Motive - Probably this motive is the most important of the three. It is the motive behind the holding of money in anticipation of a change in the rate of interest, or more precisely, because of uncertainty as to what is going to happen to the rate of interest.

The total quantity of money (M) will be held because of these motives and in varying proportions according to the strength of each particular motive.

Graphically, the schedules for each may be depicted as well as their interactions, as in Figure 5.³⁵ The curve L_1 is the liquidity preference curve for the speculative motive. It shows that as the interest rate falls, more and more money will be demanded for idle balances.³⁶

35. This graphical solution is drawn directly from that presented by Alvin Hansen, Monetary Theory and Fiscal Policy, p. 67.

36. This is so, because as the interest rate falls, the chance of having a large part of the principal wiped out by a rise, increases as the rate falls. That is, a 1% rise when the rate of interest is 3% on a \$1000 bond would mean a loss of \$250, since the same income can be bought for \$750 at 4%.

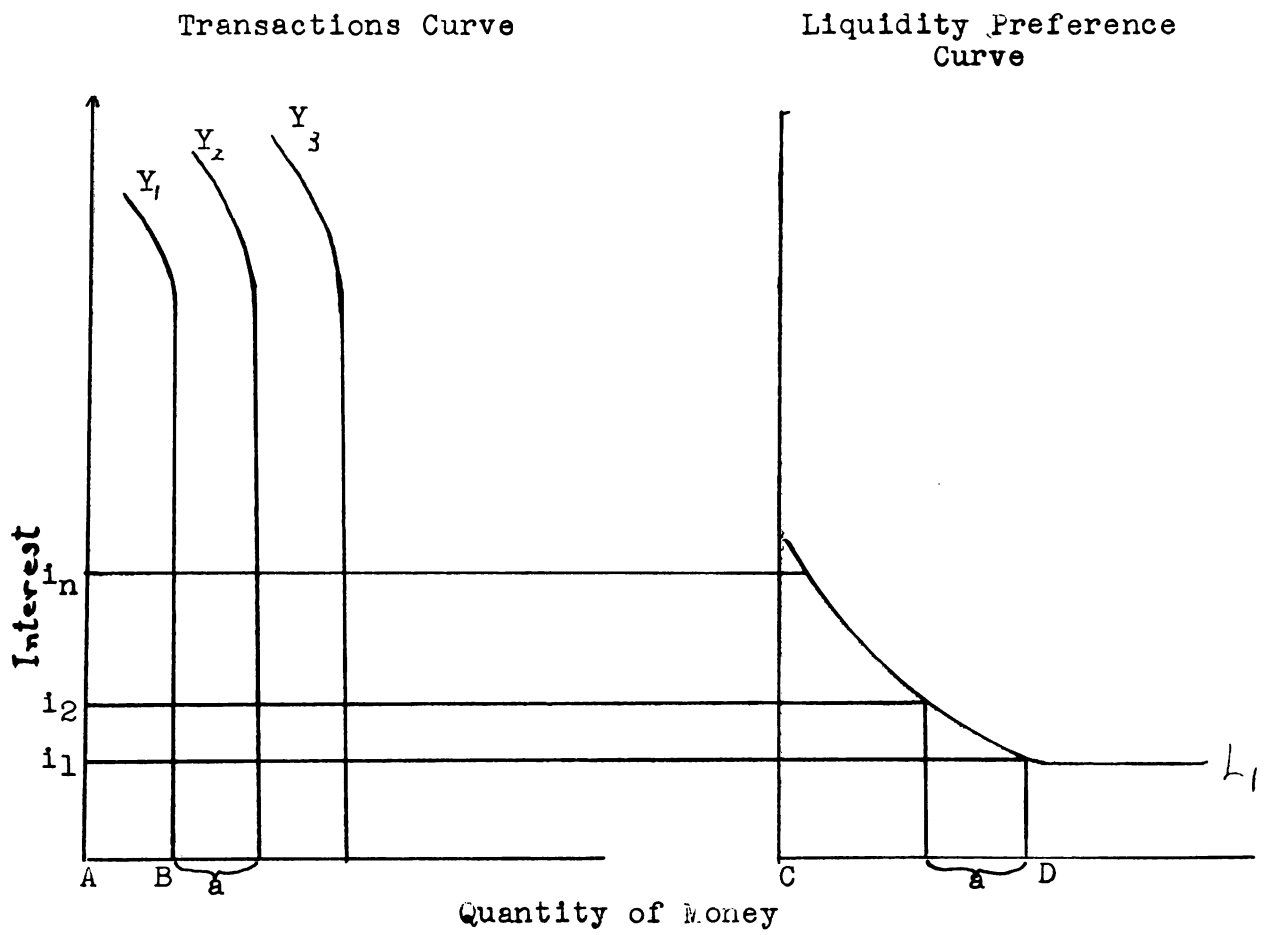
At some interest rate (i), the curve flattens out, becoming infinite at that rate.³⁷ The series of curves on the left represent the transaction schedules for cash. The precautionary holdings, which are difficult to distinguish, may be considered as being included in either schedule since they are negligible. Keynes usually lumped them with those of transactions.³⁸ The transactions function is assumed to be interest elastic only at high rates of interest. Otherwise it is completely interest inelastic, being purely a function of income.

Thus at an interest rate of i_1 , the income Y_1 , the quantity of money, which is assumed to be fixed, is divided, AB to transactions, and CD to the speculative motive. As income rises to Y_2 , more money (a) is required for transactions and is withdrawn from the speculative motive, raising the rate of interest to i_2 and so on. The process will also work in reverse, that is, as income falls, money will be realized from transactions and will "fly" to liquidity, causing the interest rate to fall until it reaches the irreducible minimum where the liquidity preference curve flattens out.

37. It is argued that eventually the curve will turn back up, for instance, when hyper-inflation sends people back to assets, but for the range that is usually important the principle seems sound enough.

38. D. Dillard, op. cit., p. 171.

FIGURE 5



Having briefly explained the nature of interest and the marginal efficiency of capital, we now turn to their role in determining the level of investment. Perhaps the easiest way of looking at the problem is in terms of familiar supply and demand analysis. The supply price of an asset is the money return that you could receive by investing the money necessary for the purchase of the asset at the current rate of interest.³⁹ The demand price, on the other hand, is the expected yield from that asset, or the marginal efficiency of capital. Therefore, as long as demand (marginal efficiency of capital) exceeds supply (current rate of interest), investment can profitably expand up to the point where they are equal, or if supply exceeds demand, contract until they are equal. Investment then, is a function of the rate of interest and the marginal efficiency of capital, and we have determined our last variable; the system is complete.

39. On the basis of some empirical studies on what business men really think of the rate of interest (J. Franklin Ebersole, "The Influence of Interest Rates upon Entrepreneurial Decisions in Business - A Case Study", Harvard Business Review, Vol. XVII, 1938, p. 35 and H. D. Henderson, "The Significance of the Rate of Interest," Oxford Economic Papers, No. 1, 1938, p. 1), it would seem that it may not be a significant variable at all, especially in short run investment projects and decisions. If this is so, some other cost function might be used to replace interest, or it may be that it is not costs but returns that are looked at by investors.

Before we begin our discussion of the system erected by J. A. Schumpeter, let us very briefly put together the parts of the Keynesian system we have assembled. Our problem was to provide a theory of output determination, and we found that its determination was the result of the intersection of aggregate demand and supply, according to the principle of effective demand. Aggregate supply we discarded as being determined mostly by familiar conditions of physical supply. Aggregate demand was found to be made up of two types of expenditure, consumption and investment. Consumption, the stable function, was determined by income, while investment, the volatile function, was determined by the relation of interest and the marginal efficiency of capital. Investment so determined, operated through the principle of the multiplier to give a determined level of output. If we understand that none of the equilibrium levels of output possible under this system are necessarily full employment levels, then we are ready to leave the Keynesian system for the moment and begin the description of Schumpeter's work.

CHAPTER II

THE SCHUMPETERIAN SYSTEM

The name of Joseph Schumpeter is usually associated with his momentous two volume treatise, Business Cycles. To the uninitiated, the Schumpeterian contribution is usually vaguely considered to be a theory of innovations as a prime cause of the business cycle. Keynes, too, is thought of in the same vein as having posited another theory of cycles in terms of investment gaps. Actually, the primary work of neither man was devoted to a theory of the cycle as such. Keynes, as we have shown, was interested in a theory of output determination. Schumpeter was interested in developing a theory that would explain economic change. It was only incidentally that either developed a theory of cycles, or perhaps one might say, consequently. In support of this argument we may offer Professor Schumpeter's own words in the preface to his Business Cycles.

"Analyzing business cycles means neither more nor less than analyzing the economic process of the capitalist era. ...I have called this book "Business Cycles" in order to indicate succinctly what the reader is to expect,¹ but the subtitle really renders what I have tried to do."

1. J. A. Schumpeter, Business Cycles, the first paragraph in the Preface. The subtitle reads A Theoretical, Historical and Statistical Analysis of the Capitalist Process.

We make this point at the very beginning in order that the reader may quickly discover that our primary interest will not be in the area of the trade cycle but rather with the system Schumpeter has erected. With Keynes we took as our main source his General Theory of Interest Employment and Money, and so with Schumpeter we shall use chiefly his The Theory of Economic Development. It is this work which preceded the classic Business Cycles, and which contains the pure theoretical model, in which we are interested.² Business Cycles is an extension and enlargement of this earlier work, coupled with a tremendous attempt to verify the model established in the earlier volume. We shall not neglect the latter book, but shall place our main reliance on the former for the reasons just stated.

THE CIRCULAR FLOW

The foundation stone on which all later refinements of Schumpeterian thought is founded is that of the circular flow concept of economic activity.³ First, as to the milieu in which the concept is operative, we shall posit a commercially organized state in which private property, division of labor, and absolutely free competition prevails.⁴

2. Business Cycles was published in 1939; The Theory of Economic Development (Theorie der wirtschaftlichen Entwicklung), German edition was published in 1911 with the English edition appearing in 1934.

3. We shall only outline the concept briefly here. For a fuller explanation the reader should see Chapter I of The Theory of Economic Development.

4. Ibid., p. 5.

We have first to consider the psychological or mental basis on which decisions within such a state might be formulated. For brevity's sake, we shall use Schumpeter's example of the farmer as our own, with the understanding that it applies to all members of the society--businessmen, laborers, etc. We shall ask, how does our farmer know, when he is raising his crop, that consumers will want the bread manufactured from his grain and in what quantities? The answer is as simple as it is obvious: experience, his own, his father's and his father's before him has given him the requisite knowledge. Moreover, he finds that in every period he must live from the proceeds of the previous period, and

"All the preceding periods have, furthermore, entangled him in a net of social and economic connections...means and methods of production...(which) hold him in iron fetters fast in his tracks."⁵

From the preceding flows our first major premise, if we extend it, as we have said, to all members of the society. This premise is that everyone lives during each economic period on goods produced in the preceding period. The process is continuous, and we see that circular flow is descriptive of the process whereby factors of production flow into the production of goods which become the income or payments of goods for the next period, and so on. Every producer of goods acquires the means to purchase exactly the amount of goods

5. Ibid., p. 6.

he has produced, and he does so. In short, supply creates its own demand; Say's Law is in full operation.⁶ This does not mean that we have eliminated change in our system, for the underlying data in which that experience is founded may change, and all will alter their behavior to correspond with the new data.⁷ Such changes will, however, come about slowly, for they must break the frozen bonds of habit.

...the economic system will not change capriciously
...but will be at all times connected with the preceding state of affairs..."⁸

Neglecting, for the purposes of abstraction, the changes just mentioned, we have a state in general equilibrium in the Walrasian sense. All the firms within our system are, in long run perfect equilibrium, and profit is nonexistent. If profit exists it is because there are imperfections or frictions existing, and we have not arrived at full equilibrium. The argument is well known. If profits are to be had, then new firms will enter, and producers will expand production until increased supply and increasing costs wipe out the profit margin, at which point it will not be profitable for the producer to alter his position.

6. There is one important difference: the flow of savings into investment automatically regulated by the rate of interest is not at work here, because, as we shall see, interest does not exist and savings are not of the type envisaged by Say.

7. Changes in consumers' taste patterns, etc., may be considered an example of a change in the underlying data.

8. Ibid., p. 9. This is Wieser's principle of continuity.

Having arrived at general equilibrium, we may well ask by what principle the total product of the economy is divided, and to whom it goes. We may discover to whom the national income will go if we trace the hierarchy of goods, i.e. consumption, to producers, to heavy production, and back to its ultimate fountainhead. There we discover that

"We can resolve all goods into 'labor and land' in the sense that we can conceive all goods as bundles of the services of labor and land."⁹

In other words, all goods are the products of either labor or land, or some combination of the two. It is interesting to note here that the production coefficients which represent the quantitative relation of these two prime factors to a unit of output are subject to change without changing the method of production. This is true to the extent that the two are substitutable for each other.¹⁰ For instance, mechanical power may be used to displace labor, or vice versa, without changing the end product. This is the key to explaining how it is possible for the economy to shift factors within itself without changing its equilibrium position. It is possible then, for the forms the goods take to vary somewhat

9. Ibid., p. 17.

10. Schumpeter makes it clear, however, that the production function which is economically best may not be that which is technologically superior. Thus we have more Fords and Plymouths than Cadillacs, because the former are economically the best. The production coefficient is more commonly known as the production function, which we shall discuss when comparing Schumpeter and Keynes in a later chapter.

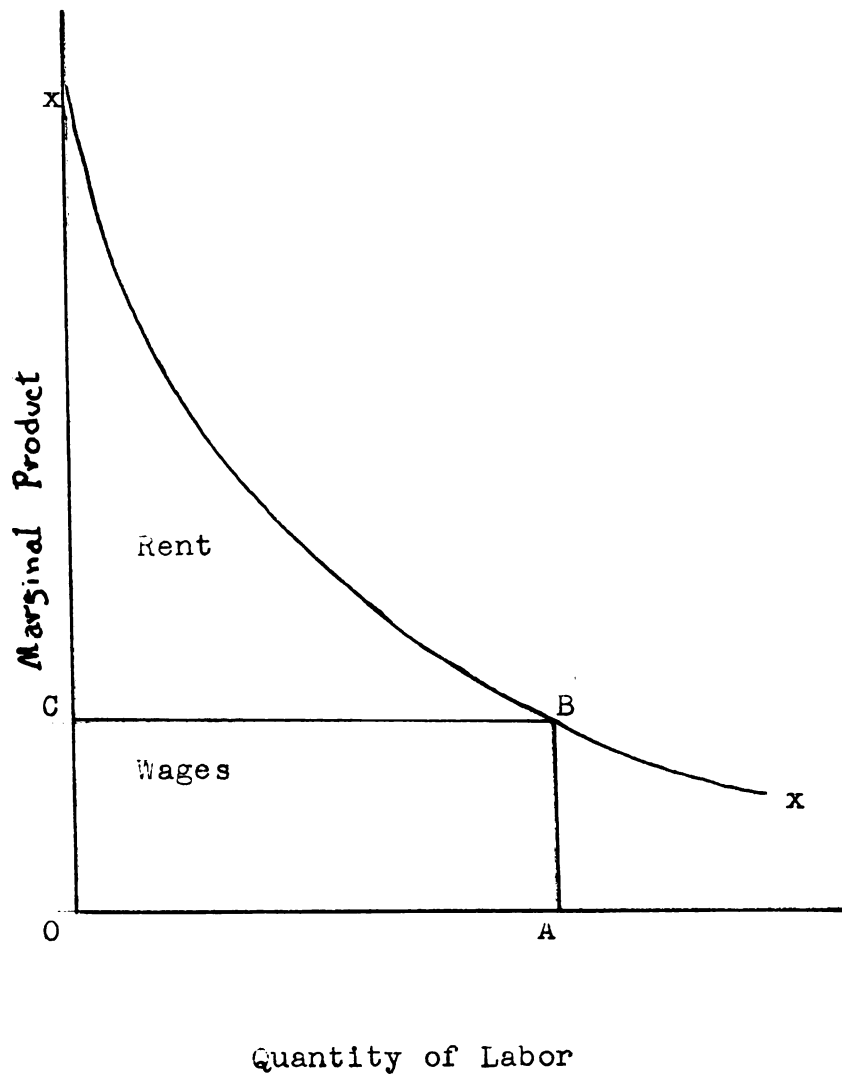
without changing the method of production nor the equilibrium position. In general, however, we may assume that more or less identical goods are turned out each year, the production coefficient being determined by each firm on the basis of long experience in deciding what the public will buy, and how it may be best produced.¹¹

Having discovered the two prime factors (labor and land), we may now proceed to examine the manner in which the total social product is divided between them. As we have already shown, profit within the circular flow does not exist, and therefore costs are just covered by receipts. Labor or land will receive as its payment then, that share contributed by its least important, or marginal unit, and the payments to both must just equal the social product.

We may illustrate diagrammatically, as in Figure 6, where the amount of labor is measured on the horizontal axis and the amount of land on the vertical. At any one point, say OA, the marginal productivity of labor indicated by the declining curve (XX) is equal to AB, and the wages of all workers are equal to the rectangle (ABCO). The residual (CDX) must, as shown above, be the return to land which we shall call rent.

11. The concept described above might be more clearly understood if it is linked with J. B. Clark's (The Distribution of Wealth, Chapter IX) conception of capital. Although capital as such has no place in the circular flow, the idea is similar in that we conceive of the social product as an abstraction which is continuous and unchanging. The material forms from which the abstraction arises, however, are subject to a fairly wide variance.

FIGURE 6



Similarly, we might consider the return to land first, leaving rent as the residual without changing the outcome.

From the foregoing analysis an important implication emerges. Since capital is not a factor of production, then interest, the return to that factor, does not exist--it is zero. Capital goods are transitory items which involve no independent value formations and receive no income as such. Zero interest will not seem so strange if we remember that in the circular flow there is no waiting and no uncertainty. Production is synchronized with consumption in the continuous process of the flow as we have described it earlier.¹²

Two more results of the above type of analysis are worthy of mention before we pass on to other topics. First of all, money in this circular flow receives its value only from the real goods it can purchase. It is a 'pure' medium of exchange. The holding of money in idle balances for purposes other than exchange is completely unnecessary.¹³ Secondly, no capitalists are present in the system, because there is no capital receiving returns as such. Entrepreneurs are "entrepreneur(s) faisant ni bénéfice ni perte,"¹⁴ whose function is simply direction, and whose income is included in wage. If by chance they own the means of production, then they receive rents as well as wages.

12. See A. Achinstein, Introduction to Business Cycles, p. 458.

13. Schumpeter, Ibid., p. 53.

14. The phrase is attributed by Schumpeter to Walras. See The Theory of Economic Development, p. 46.

Briefly then to summarize the concept of the circular flow, we have found that it is a continuous process, eliminating capital as a factor and interest as a payment, because production and consumption are considered to be perfectly synchronized. The roundabout method of production, which gives to capital a value and to waiting a payment(interest), is non-existent. Finally, we may note that the money is a passive medium of exchange only, and the entrepreneur is a simple director.

INNOVATIONS

It is quite obvious that the state in perfect equilibrium, which we have established with the circular flow, is not an accurate picture of the real world. It is possible with our model to examine the new equilibrium position reached after normal changes in the data of the system have worked themselves out, i.e. population growth, changes in consumer tastes, etc., but we are unable to explain, however, the occurrence of production revolutions, the building of a railroad, or, in short, changes in the data which occur by fits and starts. These changes in the data, which have their origin in sources outside the economic system, we shall call development. To define development we turn to Professor Schumpeter's own words.

"It is spontaneous and discontinuous change in the channels of the flow, disturbance of equilibrium, which forever alters and displaces the equilibrium state previously existing."¹⁵

15. Schumpeter, Ibid., p. 64.

These developments are assumed to be initiated, as a rule, by producers and not consumers. A change originating in consumption we shall consider, for the most part, as being a change in the underlying data. For such a change, the static analysis of the circular flow is adequate. Since the producers' main function is the combining of the factors of production, we further define development as the making of new combinations of these same factors by the producer. Moreover, these new factor combinations are not of the type that gradually occur in any production process, but are sudden and drastic recombinations which appear on the economic scene discontinuously. These new combinations we call innovations, and the following five types of such changes are considered to be inclusive: (1) the introduction of a new good or a new quality within an old good; (2) the introduction of a new method of production not necessarily related to technology, for it may occur in new methods of distribution or marketing; (3) the opening of a market new to the industry concerned, even though this has previously existed; (4) the acquisition of a new source of supply, regardless of whether it has previously existed or is newly created; (5) the carrying out of a new organization of an industry, whether it means creating a new structure or displacement of the old.¹⁶

16. Schumpeter, Ibid., p. 66. The concept of innovation has been open to a good deal of criticism from prominent economists. The discussions of these arguments advanced

Two assumptions are necessary at this point to clarify the manner in which these innovations work themselves out in the economic system. First, we assume that as a general rule the new combinations are carried out by new firms which do not arise from old firms, but rather exist beside them. This is important in explaining the elimination of old firms, the rise and fall of families (moneywise), and the general chaos that seems to attack the personal fortunes of the people who make up an economy during a business cycle.

Secondly, we assume that at the time the new combination takes place, the economy is operating at full employment. That is to say, there are no idle laborers, no unused raw materials, and no idle productive capacity.¹⁷ If it is remembered that we are still starting from the theoretical circular flow, such conditions will not seem unduly artificial, since full employment is a characteristic of such a flow.

against Schumpeter's concept have no place in this chapter, but the interested reader is referred to the following sources. Concerning the problem of definition, see J. W. Angell, Investment and Business Cycles and S. S. Kuznet's "Schumpeter's Business Cycles," American Economic Review, June 1940. For a discussion on whether the concept is too broad or too narrow, see O. Lange, "A Note on Innovations," Review of Economic Statistics, February 1943 and W. W. Rostaw, British Economy of the Nineteenth Century, p. 29.

17. In real life such unemployment quite obviously does exist, and would be a favorable condition to the emergence of new combinations. However, such unemployment is the result of the very development we are trying to explain, and to admit it at this stage of our analysis would be to place the cart before the horse.

The next step in our chain of reasoning follows logically from this second assumption. The firms which are already operating within the circular flow have no trouble procuring the means of production, for they have, as we have seen, the proceeds from the previous period, which are just equal to their needs. The working of the mechanism is automatic and perfectly synchronized, as we discovered when we examined the circular flow concept. The new firm is in quite a different position. Not only does it not have the proceeds from any previous production to secure the necessary factors, but those factors are completely employed by the old firms. How then do we resolve the dilemma? The answer is credit, for only thus may the entrepreneur who is about to begin a new combination secure the necessary purchasing power under the conditions we have imposed. In traditional theory, as we have mentioned, savings were the chief source of investment funds, but in our circular flow they do not exist except as the realized proceeds from previous production, and they are exactly equal to the amount necessary to maintain this equilibrium position. No surplus or extra funds are available, then, except as credit creation shall provide them.

There are, in general, two sources of credit upon which entrepreneurs may draw. The first, and most obvious, is the banks. Under fractional reserve systems it is possible for

them (the banks) to create new money.¹⁸ That this new money has no relation to past production and no real backing, in no way diverts its equal command over goods with money previously existing.¹⁹

The second source of credit is the profits accumulated by previous innovators, but since we have as yet not explained the process whereby they acquire these profits, we shall only mention this possibility here as existing. By introducing the concept of credit into the Schumpeterian system, we have made a place for a familiar figure which we have up to now excluded--the capitalist.²⁰ It is his function to provide this credit, and it is only this function which gives him a place in our society.

It remains to describe the entrepreneur, who is the innovator, before we may pass to another topic. He is, most of all, a man who has the vision to see the possibilities in a new method and has both the courage and the ability to attempt to introduce his idea into a hostile world. Unlike our entre-

18. This is the most important way of creating new money, but any method, e.g. bank acceptances, which create new purchasing power, even though this purchasing power is fully backed by securities which are not circulating media, may be considered as credit. See Theory of Economic Development, p. 73.

19. Except as price rises reduce its 'real' value.

20. If the reader will withhold his criticism of this definition until our discussion of capital, the matter will be a little less open to dispute. It is this function also which makes us a capitalist society as differentiated from an exchange economy.

preneur of the circular flow, he is not a mere manager or director who repeats the old ways continuously, but rather a brave knight who strikes off alone into the wilderness of new and untried methods. It is to be hoped that in attempting to distinguish the innovating entrepreneur from his circular flow counterpart, we do not paint a picture of superhuman genius. To balance the picture and perhaps clarify it somewhat, we shall close our brief description of the innovator with a quote from Schumpeter.

"...these people are by no means looked upon as particularly rare birds. All we postulate is that that ability is distributed as unequally as others are and all we hold is that this fact has an important influence on the mechanism of economic change."²¹

PROFIT

Entrepreneurial profit in the Schumpeterian system is, at least in definition, no different from any modern businessman's version of the same thing. That is to say, profit is a surplus over cost or the difference between receipts and outlays. It is in the explanation of the origin of this surplus, and the reasons for its accruing to the entrepreneur only, that we will mark the departure from traditional theory and get at the roots of Professor Schumpeter's concept.

Let us examine the introduction of an innovation to see if we may discover where in the process profits arise. We have first to impose three conditions that are necessary, both for

21. A. Schumpeter, Business Cycles, p. 130.

the new combination to be properly classified as an innovation and for profit to appear. First, the price must not fall when the product, which is the result of a new combination of factors, first appears on the market. If the price does fall, it must not be to that level where receipts just equal costs. Secondly, the new production function, in terms of input costs, must be below that of the old output, remaining the same or increasing.²²

The third condition is contingent upon the rise in prices that will be brought about by the new firm bidding factors of production away from the old. This rise in prices must be anticipated and included in the entrepreneur's costs if our third condition is to be fulfilled. When and if these three conditions are realized, then a surplus of necessity must be produced which is a net profit. Such a surplus will occur if the above conditions are fulfilled, even in a socialist or non-exchange economy.²³

The solution, when the three conditions are fulfilled, is depicted graphically in Figure 7. The cost curves of the old firms are represented by the solid lines (MC and ATC), and the price is OT. The firm is, as we have noted, in equilibrium,

22. Schumpeter does not use the production function in explaining the second condition, but we have introduced it here because we wish to make use of it in a later chapter.

23. While it is true that in such economies the surplus will probably not accrue to the leader but be divided among the other factors, nevertheless the surplus does arise.

and costs are just covered as indicated by the tangency of the average total cost curve to the average revenue curve (PP_1) at R. The innovating firm's cost curves are represented by the broken lines (MC and ATC). The shaded area (PAST) represents the total profit as long as price remains at OP. Some profit would obviously be made with the cost curves shown, as long as price remains above OT.

It has been objected that these three conditions, which we have cited as the conditions for the introduction of the most common type of innovation, rigidly limits our concept of innovation. To quote Professor Kierstead,

"This emphasis, we might note, implies that Professor Schumpeter...always thinks of it (innovations) as the introduction of new-and less costly ways-of making old goods."²⁴

The criticism is certainly not valid, as anyone may verify for himself by consulting The Theory of Economic Development.²⁵ The type of innovation we have developed is perhaps the most obvious and quantitatively the most important, but Schumpeter also develops other important types, including the substitution of one good for another, an increase in quality, new markets and completely new goods.²⁶

24. B. S. Kierstead, *Theory of Economic Change*, p. 96. Italics mine.

25. See particularly pp. 34-137.

26. See The Theory of Economic Development, pp. 134-135. In real life of course many of these innovations are carried out by old firms, but for the sake of clarifying the process we are describing, we have eliminated this possibility.

Having briefly outlined the process whereby profit appears, we have now to answer the question of why this profit should be diverted to the entrepreneur. The first and most obvious reason is that without the innovator, the surplus would not have arisen. He may be considered, for the moment, a third primary factor of production. Secondly, we may answer the question indirectly by showing why it does not go to the two original factors, labor and land. Their value is determined by what they could receive in alternate employments. Hence in the new firm they will receive no more than in any other firm in the system at the time the innovation is introduced. We have shown, however, that in the new firm less of the factors are employed, or those employed produce more, so that there is clearly a surplus but one to which they have no claim. Finally the factors other than entrepreneurship may be interchanged, i.e. labor may replace machinery and vice versa without change in the end result, but all would be lost if the entrepreneur were removed.

The profit will, however, not be permanent. Once the innovation has begun, imitators will flock to the band wagon, and the press of competition will eliminate the surplus sooner or later. As the new combination becomes more and more common, the entrepreneur loses his unique position and becomes replaceable. He then returns to his status as a labor factor, and the total proceeds are once again directly imputable to the original factors--we are back in equilibrium.

INTEREST

Because we wish to examine the theory of interest in more detail in the following chapter, we shall attempt here to present only the bare outline of the complete theory. As we have seen in the circular flow, interest does not exist, and so we assume that it is connected with development. Further we have discovered that the surplus produced by development accrues to the innovator as entrepreneurial profit.²⁷ Interest must, therefore, flow from this profit, since there is no other surplus in existence. Interest is a permanent income, and as we have shown that the entrepreneurial profit from any one innovation does not endure, it follows, then, that interest does not flow from any one surplus but from a class or series of such surplus. Neither is it possible to attach interest to any concrete factors of production, for, as we have seen, they do not normally give rise to any returns over those going to the original factors of production. The above does not mean that profit and interest are identical, but only that profit is the source from which interest flows.

We have still to ask ourselves why interest must be paid. We know that if entrepreneurs had in their own hands the power to command the producers' goods they require, entrepreneurial

27. Some profit also goes to old firms because of price rises brought about by the income created by the innovating firm, but since this is simply induced profit, we may ignore it.

profit would exist, but there would be no reason to pay interest to anyone.²⁸ The entrepreneur does not ordinarily have the means, in his own right, to acquire the factors he needs, as we have shown earlier. It is necessary for him to turn to the capitalist who removes the obstacle from the innovator's path by a loan. In accord with the nature of things, however, he does not make such loans out of a desire to see the system develop. He requires a payment for the use of his capital, and this of course is interest.

"Hence...interest is an element in the price of purchasing power regarded as a means of control over production goods."²⁹

While it was not possible to introduce any time-preference in Professor Schumpeter's original static state, we may, with the aid of the two concepts just developed (profit and interest), do so now. If an entrepreneur expects that his innovation will yield him a profit when it is completed, (and why else should he innovate) then present money, to secure the means of production, will have a greater value than future money. He will, therefore, willingly pay the present premium (interest) to secure that money.

28. This is the argument advanced on p. 177 of The Theory of Economic Development, and Schumpeter adds that neither would there be any motive for the entrepreneur to consider any part of his profits as interest on the capital he has expanded. This seems, to the present author, to be true only if it is not possible for the entrepreneur to invest his means of production in an alternate method at interest.

29. The Theory of Economic Development, p. 184. Italics Schumpeter's.

We shall conclude our brief remarks on interest by adding that interest is, as we have demonstrated, a monetary phenomena, and the rate of interest is determined in the money market according to the familiar law of supply and demand.³⁰

CAPITAL

It remains to outline our theory of capital for the picture to be complete.³¹ We have already indicated that it is the capitalist's function to provide the entrepreneur with the necessary purchasing power to withdraw from the circular flow those factors of production which he needs. We might add that it is precisely this function of capital which distinguishes the capitalist economy from other forms, where such control over the factors is secured by command or mutual agreement. This is the only function of capital and its *raison d'etre* in the economic organism. In the circular flow it would not exist. It is purely a product, then, of the one causal factor we have admitted to the system--namely, development.

It follows from this that capital does not consist of any definite category of goods, either producer or consumption goods, for both existed in the circular flow where capital was not to be discovered.

30. Ibid., pp. 192-193.

31. Ordinarily we should, after explaining the theory of development, proceed to outline the part it plays in Schumpeter's business cycle theory. Since, however, we did not so include Keynes's theory of the cycle, we shall postpone this discussion to the last chapter, where we will compare the two theories.

This is, and of itself should be, sufficient grounds for believing that capital is not grounded in any one class of goods. The argument may, however, be extended beyond the static state. From the standpoint of the entrepreneur, all the goods he needs to carry out a new combination are on the same level. That is to say, he needs labor, land, machinery, new materials, and so on. There are, of course, real physical differences in the items he will need, and there are also differences of magnitude as regards each type of good, i.e. he may, perhaps, need more laborers than machines, or more land than both, etc. No one good or class of goods is of any use to the businessman, however, without their concomitant brethren; he needs them all. The argument is not damaged if the producer first buys one definite type of good in order that he may then procure the others. For example, he might acquire consumption goods which he could exchange, as the situation required, to secure the services of labor or land. The significant point to be made is that he does buy these goods with money for which he pays interest.

Capital, therefore, is not goods, but rather command over goods.

"Goods are bought for capital...but this very fact implies the recognition that its function is different from that of the goods acquired...It (capital) stands as a third agent necessary to production...between the entrepreneur and the world of goods."³²

32. The Theory of Economic Development, p. 117. Italics Schumpeter's.

Once he has exchanged the fund of capital which he has presumably borrowed, are not the goods, which he has acquired at this point, his capital? We must, says Schumpeter, answer in the negative. The entrepreneur has spent his capital, and he has now only a stock of goods. Indirectly it is possible, however, to consider these goods as capital or, perhaps more precisely, potential capital, for the owner may sell them in the market. He will again find himself in possession of capital. This argument would seem to highlight our definition. It was not the goods, but the money he received for their sale, which is, in our sense, capital.

Capital then is a fund of purchasing power; but is all purchasing power capital? Again we must answer in the negative. We know that in the circular flow there exists purchasing power (money), but it is simply a medium of exchange and nothing else. It facilitates exchange, but it is not essential to it, i.e. presumably it would be possible to carry out transactions without the aid of money, although it would be admittedly extremely clumsy. It is not so in the carrying out of new combinations, as we know, for the command over other goods is essential. We come therefore logically to our final conclusion. Capital is a concept connected with development and only development. It is

"...that sum of means of payment which is available at any moment for transference to entrepreneurs."³³

33. Ibid., p. 122. The form capital takes may be quite varied, i.e. money, credit, promissary notes, the limiting condition being that it be used in the carrying out of some innovation. Italics Schumpeter's.

We will end our remarks on capital by noting that in the Schumpeterian system there is no social capital, for all forms of capital are only performing their real role when they are being used by private entrepreneurs engaged in carrying out an innovation.

We may now briefly outline the Schumpeterian system as we have presented it. First of all we postulated a static state in which there were only two prime factors of production, labor and land. Cost just equaled receipts, with all income going ultimately to the factors just named. Production in our circular flow was perfectly synchronized with consumption, so that there was no such thing as time preference, and consequently no interest. Innovations, which in the most general case lowered cost curves, upset our equilibrium position and made entrepreneurial profit possible. To secure the means of production we introduced capital and its payment, interest. Capital, we discovered, was not a concept vested in concrete goods, but merely the means of acquiring those goods, usually money. Finally we noted that *ceteris paribus* competition from a flock of imitators would reduce the innovator's profit margin to zero and restore our system to equilibrium.

CHAPTER III

THE PARTS COMPARED

Before we begin our discussion of the Keynesian and Schumpeterian schemata, it would be well to clarify our method of attack. This section of our work is devoted to a comparison of the individual parts of the two systems. We have selected what we considered to be four of the most important of these parts: the rate of interest, the theory of capital, unemployment, and the theory of prices. This list is not inclusive, but we hope it has covered enough of the fundamental concepts to give the reader some idea as to the similarity of the two systems, in both approach and results. We have tried to escape the pitfall of 'forcing' our comparisons, of trying to make loose ends fit when they in fact do not. We doubt that we have been blameless in this respect. Any errors in either analysis or the conclusions reached must be laid at the writer's door. We have stated, with each concept compared, our own opinion regarding their similarity. Whenever possible we have also interjected the opinions of others, and if we disagreed we have tried to show why. We ask the reader to reserve judging our conclusions until the overall reviews of both systems have been made in the final chapter.

THE RATE OF INTEREST

As a point of departure for our comparison of the rates of interest developed by these two men, we shall utilize a statement in an article written by R. M. Goodwin, wherein that gentleman dismisses our problem in a very cursory manner.

"He (Professor Schumpeter) cannot, however, be classified with Lord Keynes, in spite of the fact that both take the monetary approach to interest problems."¹

We thus establish the first, and what Mr. Goodwin considers to be the only, point of contact between the two theories. Mr. Goodwin's proof, although not stated, apparently stems from remarks made by Schumpeter in Business Cycles.

"In Mr. Keynes's The General Theory of Employment, Interest and Money, 1935, the reader finds also a monetary theory of interest which in some points agrees with the one above submitted and in others differs from it."²

If we may take the above statements as authoritative, then we have to begin with at least one similarity, namely, that both writers (Keynes and Schumpeter) regard interest as a monetary phenomena.³ We may now ask ourselves exactly what we mean when we say interest is a monetary phenomena.

1. R. M. Goodwin, "Keynesian and Other Interest Theories," Review of Economic Statistics, Vol. XXV, 1943, p. 6n.

2. Business Cycles, p. 127.

3. On the surface such a concept is not new, being probably as old as Adam Smith. What is meant, however, is that the rate of interest is 'real' money phenomena, not tied to underlying productivity as it is in Böhm Bawerk, for example.

The most obvious, and at the same time superficial, answer is that interest is a price of money. In both the systems examined, we know this to be true. In Keynes, interest was the price paid for liquidity, or stated another way, the price necessary to induce the holder to part with liquidity which, generally speaking, was money. In Schumpeter's Pure Model,⁴ interest was the price paid to the capitalist in order that the entrepreneur might be thus enabled to bid factors away from old firms.⁵ We may carry our analysis a step further by investigating the manner in which these respective prices are determined. We shall consider first the Schumpeterian method, as outlined in The Theory of Economic Development.⁶

First of all we postulate that any normal person values his stock of money, and changes in his stock of money, according to the goods he may exchange for it. The evaluations are

4. By Pure Model we mean that concept of the circular flow which we sketched briefly in Chapter II. Actually this is only a first approximation to the whole system which Schumpeter 'builds' through three approximations, dropping at each successive step such assumptions as take the model away from reality. We shall have more to say along these lines when we compare the cycle theories of both men.

5. Money includes checking deposits, savings deposits, etc. It is interesting to note that while for each system money is the medium used in both, the principal behind interest would not change if money were non-existent. In the Keynesian system people would find some other commodity that satisfied their desire for liquidity, and in Schumpeter's world some other means would be found to withdraw factors from old firms, and presumably some payment corresponding to interest would still be paid in both systems.

6. See The Theory of Economic Development, pp. 192-193.

subjective, and we may derive a utility curve for varying quantities of money for each individual.⁷ By adding these utility curves for all individuals, we may derive a curve for society as a whole. If we consider varying rates of interest as the payment necessary to offset the surrender of varying quantities of money, then we may derive a supply curve similar to that in Figure 8a. This curve represents the potential supplies of money that might be offered on the money market at various rates of interest.

Now on the demand side of our picture we have the entrepreneur who wants to borrow funds to begin his innovation. He will be ready to offer in payment for that money an amount equal to the marginal increment of profit he will gain by employing the funds in his business. Now there will be some entrepreneurs who expect a very high marginal return, and who will, therefore, be willing to pay a high rate of interest. As the interest rate falls, however, more and more entrepreneurs whose profit expectations are lower will enter the market for money, and our demand curve will slope downward to the right (DD in Figure 8a). At the intersection of the two curves (R), the rate that will prevail is established.

In the Keynesian system, on the other hand, the quantity of money is assumed to be given and may be represented by MN in Figure 8b. The supply curve here represented is interest

7. Presumably such a curve would exhibit the same diminishing utility as that used for other commodities.

FIGURE 8a

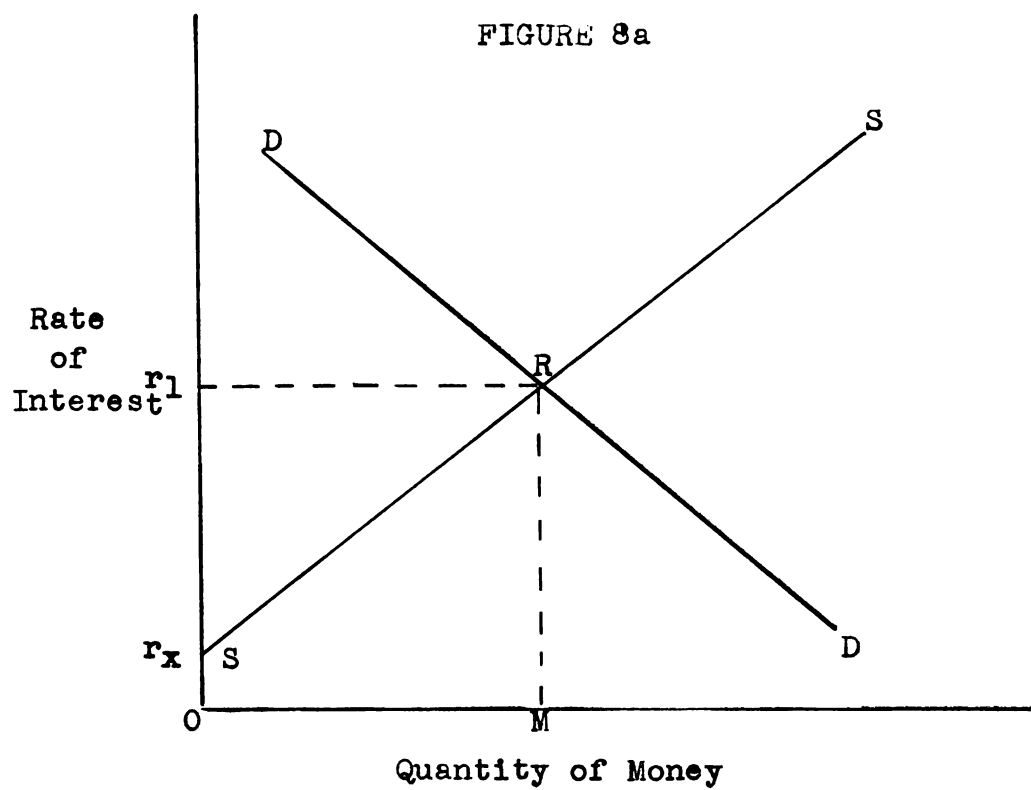
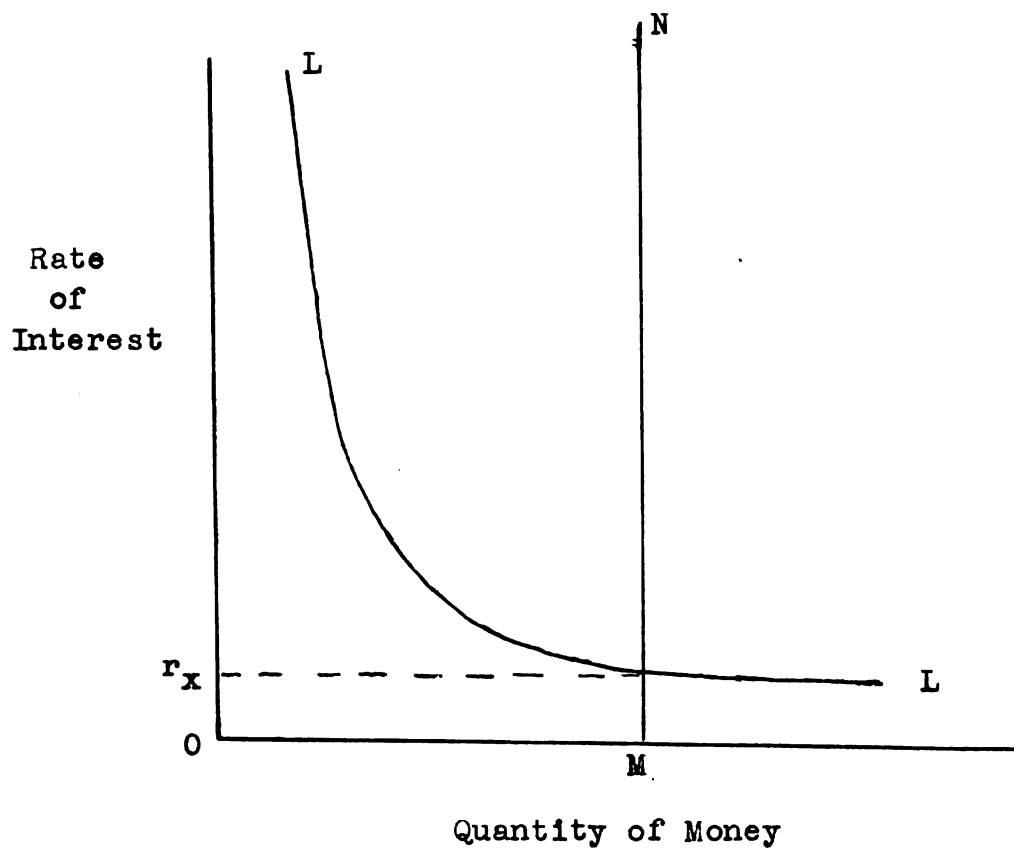


FIGURE 8b



inelastic; it is assumed to be a constant, determined by the monetary authorities. The demand curve (LL) is not, as with Schumpeter, a demand by entrepreneurs for funds to begin new enterprises, but rather it is the demand by all individuals for idle balances at varying rates of interest. At first sight there would not seem to be any similarity between the two systems.

There is, however, another way of looking at the determination of interest which receives some support from Professor Schumpeter.⁸ We discovered the source of interest to be profit, but once we admit interest into the system, its spread throughout the system is rapid and complete. The present premium, once established, becomes a cost factor for everyone including the entrepreneur. This is because money is, of necessity, at one moment of time, all of the same type. Therefore, in order to stay where it is (new firms or old), it must continually

"...resist a pull toward the money market, which at the margin is measured by the rate of interest."⁹

If we assume that at a given point of time there is existing a definite quantity of money, which includes the amount banks have created and technically could create on the basis of the reserve ratio, also existing at that time,¹⁰ then our supply curve for savings becomes identical with the Keynesian supply curve, i.e. it is interest inelastic.

8. Business Cycles, pp. 607-608. The following paragraph is drawn from these pages.

9. Ibid., p. 608.

10. This seems logical enough, assuming that banks are willing to expand the money supply to the technical limit, which is

In place of the demand curve we have derived, we substitute a Wicksteedian demand curve which refers price (interest here) not to that quantity of any commodity that buyers will take at that price, but to that quantity and the quantity which owners themselves keep. For example, if a seller held 100 units of A and offered 80 of these units at \$10.00 per unit for which a buyer was found, then demand would not be the 80 units actually bought but also the 20 retained by the owner, or 100.¹¹ On the basis of this type of demand curve, we may view all money as being offered on the money market. Part of this money, however, is taken from the market by the owner himself. To determine how much of the available quantity of money is retained by the owner, we need only have reference to the liquidity preference curve of Figure 8b. The curve, by definition, tells us exactly what quantities of money people will want to hold out of a given stock at various rates of interest. The two theories when regarded in this fashion are exactly alike.¹²

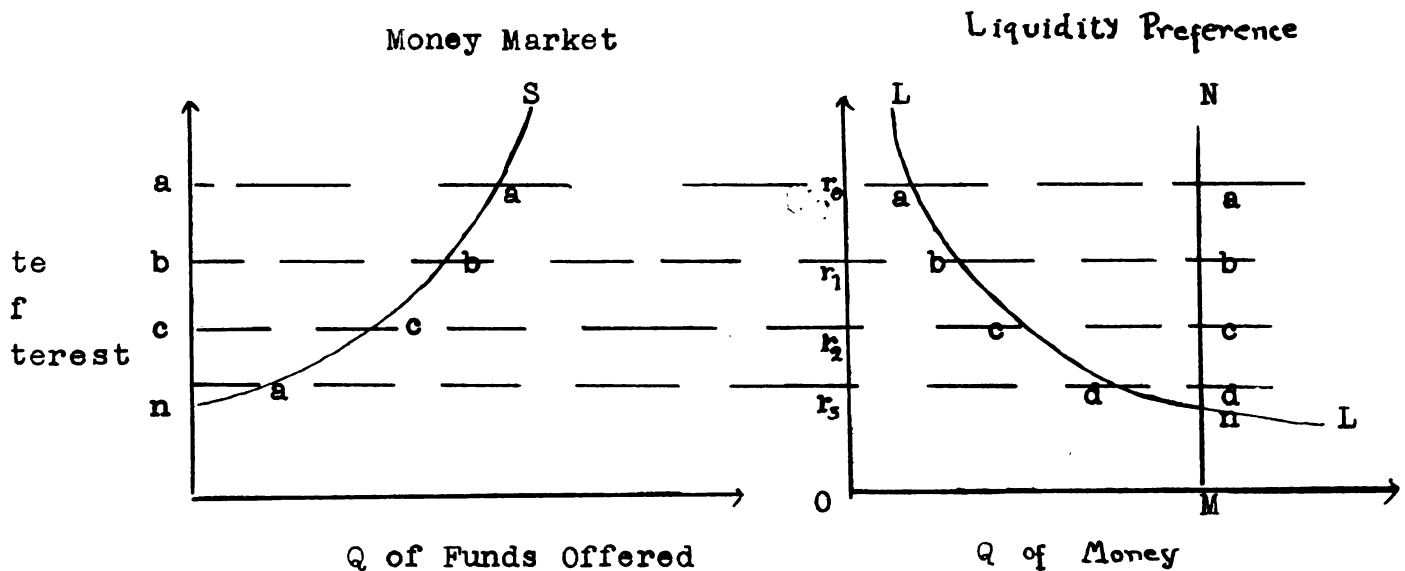
the reciprocal of the reserve ratio, since this would actually be the amount available. Even if this were not the case, it is simply a matter of defining the expansion they would permit to achieve the supply, adding, of course, the money already created.

11. In Figure 8a, as we originally explained it, demand would be 80 in the above example.

12. At this point the argument ceases to follow that outlined by Schumpeter. Ibid., pp. 607-608.

If we wished to discover what quantities would be available to entrepreneurs at this fixed point in time, and with a quantity of money (OM), we may derive a supply curve for such funds from the liquidity preference schedule. Thus the liquidity preference schedule (LL), below in Figure 9, tells us that at an interest rate r_0 , a quantity r_0a would be demanded for idle balances leaving aa free to seek a buyer on the money market.¹³ Similarly, at an interest rate r_1 , a quantity r_1b would be held, and bb would seek a buyer, and so on.

FIGURE 9



13. The liquidity curve used here includes sums demanded for the transactions and precautionary motives.

Have we then proven that the two theories are in reality one in the same? Not according to the originator of the theory of innovations.

"Thus we meet, for a moment and under very restrictive assumptions, the concept of interest which has, in the General Theory of Employment, Interest and Money, been adopted by Mr. Keynes. But the point of tangency between our argument and his is not more obvious than the divergence of the curves."¹⁴

Before we agree or disagree with Mr. Schumpeter, let us examine these "very restrictive assumptions" which he mentions. If he is right and the similarity between the two systems is forced upon his system, then the identity must be regarded as being at most superficial. What then are these assumptions?

Unfortunatly Professor Schumpeter neglects to list them explicitly, and so it is necessary that we state what in our opinion they are. We shall do this by taking the inferences and implications present in the argument presented by Schumpeter in Business Cycles,¹⁵ from which the argument presented earlier was drawn. To begin with we extract a quote from that argument.

"...for the moment and for the purposes of illustration only, we assume that there is such a thing as a definite quantity of (cash and) balances in existence...at any point of time..."¹⁶

The implication which seems obvious, at least to us, is that

14. Ibid., p. 608n.

15. Ibid., pp. 607-608.

16. Ibid., p. 608.

to assume that such a fixed quantity of money exists does not conform to the facts--it is unreal. Why does Schumpeter believe this to be an unreal assumption? Fundamentally we believe the answer lies in the theory he is attempting to develop. It is, above all else, a theory of change, of dynamics, and the explanation of those dynamics. The very birth of any quantity, or relation of quantities, sets in motion the forces that will make it impossible for them to endure. Within the confines of such a theory, fixities are intolerable.

Does this mean that our argument asserting a similarity between the two theories must collapse? Not at all. The Keynesian system is not a theory of dynamics. At the most it is comparative statics. That is to say, Keynes is not trying to explain the vast complexity of factors that are continually changing our economic system. His theory of interest and Schumpeter's might be likened to a moving picture in which thousands of single photographs are moving so rapidly across the projector that we are enabled to see movement on the screen. If the camera is suddenly halted at one particular photograph, however, we have a motionless picture of that particular moment in the film. This is Keynes's theory of interest, but at that particular moment of time and for any other moment at which we stop the camera, it is also Schumpeter's, by virtue of his own argument.

We might perhaps expand the argument a bit further. Keynes is dealing essentially with short run situations.

In the short run, the fixed quantity does not seem an unreasonable assumption. We doubt that Schumpeter would object to this. Schumpeter further notes that demand curves subject to strong shifts and distortions are more important in cyclical phases than curves subject only to shifts along themselves. There is, so far as the present author can see, no reason why the Keynesian curves may not qualify as 'good' curves, since they may be shifted, and quite widely, without affecting Keynes's arguments. Secondly, and in order to justify the use of the Wicksteedian demand curve, another assumption is necessary.

"The owner must then be thought of as paying interest to himself, either in the form of some element of return if he uses his money in his business, or in the form of some satisfaction (equivalent to the loss of interest involved) if he does not. But apart from being applicable to the case of perfect competition only, this schema presupposes a string of assumptions that are entirely inadmissible in the case of money."¹⁶

We agree with Schumpeter that under perfect competition the argument certainly would hold.¹⁷ We do not, however, agree that this is the only case where the proposition holds. It is true that the satisfaction will not be of the utility

16. Ibid.

17. Under perfect competition, factors will seek alternative employment if the return is higher than that in the position they now occupy. It follows therefore, that if interest is being paid in some sectors of the economy and owners retain balances, those balances must be earning some sort of return subjective or otherwise. If they were not, they would flow to the money market.

type of which Schumpeter seems to be thinking. There is, in spite of this, a definite return which every holder of money receives. Keynes has provided us with insight into the nature of this in his liquidity preference theory. People do hold money because of the three motives described in chapter one, and interest is the price necessary to induce them to part with these balances. Since the Keynesian system is most assuredly not one of perfect completion, it seems, at least to the writer, that this restriction is not so inapplicable as Schumpeter believes.

Finally we will consider the two theories in regard to the 'earth' from which they spring. It cannot be too firmly emphasized that Schumpeter's whole aim and purpose is to construct a theory of economic development. To begin his theory it was necessary that he have a starting place, a point of reference. For Schumpeter this starting point was the state in static equilibrium described in the preceding chapter. It does not matter that such a state probably never has nor never will exist. The important point here is that this is his insight into the underlying basis of the capitalistic system. The world is not one of a circular flow, but it would be were it not for the process of development and the infinite ramifications of that process. It is possible, and even probable, that all economists can look at the real world and identify the same important factors there, i.e. interest, capital, investment and so on. When economists begin, however, to

name the sources from which these factors spring, or to describe their nature, relative importance, or relation to one another, differences arise.

Professor Schumpeter has given us a very elaborate picture of the source of interest and profits in The Theory of Economic Development. Lord Keynes in The General Theory tells us practically nothing about the source of interest. This undoubtedly constitutes a difference between the two theories, but it would seem to be more a difference of omission than a fundamental point of departure. It is difficult to see where the Keynesian system would be affected by agreement with Schumpeter on this point.

In Business Cycles¹⁸ Professor Schumpeter has admittedly carried his discussion of the rate of interest in the real world much further than Keynes has seen fit to do in The General Theory. Whether or not his (Schumpeter) findings bolster or weaken the Keynesian position we do not propose to discuss here. (Our point is simply that in the theoretical models of both men, there is a plane of theory on which a meeting, as far as the rate of interest is concerned, is achieved.) We hope too that we have demonstrated that the Keynesian liquidity preference is not in opposition to Schumpeter's theory of interest, but rather, at least on the supply side, a complement to it.¹⁹

18. Ibid., Chapter XII.

19. This opinion is shared by A. Smithies, "The Quantity of Money and the Rate of Interest," Review of Economic Statistics, Vol. XXV, 1943, although we take full responsibi-

THE ZERO RATE OF INTEREST

Before we leave the subject of interest, we shall try to clear up one more point. As we have shown, the rate of interest in the circular flow is always zero.²⁰ At the same time we know that the Keynesian rate of interest can never fall to zero, but the liquidity preference curve always levels off at some positive rate. Interest can never fall below some positive rate that will be just high enough to cover the minimum costs and risks involved in making a loan.²¹ Does this seeming divergence constitute a real difference between the theories? We think not. What are the two forces that maintain the Keynesian rate of interest at some positive level. The first, as we have mentioned, is the risk involved in making a loan; but in the circular flow there is absolutely no uncertainty, and consequently no risk. The second force is the

lity for the manner in which we have worked out our proof.

20. L. Robbins ("On a Certain Ambiguity in the Conception of Stationary Equilibrium," Economic Journal, Vol. XL, 1930) insists that a zero rate of interest is not compatible with the circular flow. The argument may be briefly stated. If no positive rate of interest is present, then there is no incentive for the owner of the factors of production to refrain from consuming his capital now. The argument has been amply refuted, we believe, by P. Samuelson ("Dynamics, Statics, and the Stationary State," The Review of Economic Statistics, Vol. XXV, 1943). Briefly his argument is this: substitution on even terms would mean the units substituted would have a lower utility in the present than in the future since by being added to present income they (the units) place themselves at a lower spot on the diminishing marginal utility curve.

21. See L. R. Klein, The Keynesian Revolution, p. 71.

cost involved in making a loan. In our opinion such costs are not interest, but handling charges. There is, then, no real difference implied by the zero rate of savings if we remove the restrictive assumption of uncertainty from Keynes.

CAPITAL

The General Theory of Employment, Interest and Money contains one chapter (Chapter 16) in which Keynes discusses the nature of capital. In comparison with the Schumpeterian discussion, it is extremely meager and superficial. We shall offer what comparison seems possible under such circumstances, with the understanding beforehand that Keynes has really given us very little with which to work.

In so far as we can determine, capital, to Keynes, is real physical goods, as opposed to the Schumpeterian notion that it is the command over those goods, usually money. When speaking of the return to capital, however, we speak in what are substantially money terms.

"It is much preferable to speak of capital as having a yield over the course of its life in excess of its original cost, than as being productive."22

The reason given as to why it is possible for an asset to offer a prospective yield greater than its initial price is because the asset is scarce.²³ Moreover, it is kept scarce

22. The General Theory of Employment, Interest and Money, p. 213. *Italics Keynes's.*

23. Ibid.

because of the competition of the rate of interest on money. Clearly, this places capital in the category of real assets. In Schumpeter, the rate of interest will perform much the same function. That is to say, innovators will be limited in the amount of money they will borrow to buy producers' goods by the expected profit on the marginal increment of those producers' goods and the rate of interest.²⁴ Schumpeter would probably also agree that as these producer goods became less scarce, real productivity would increase, but the yield (profit to Schumpeter) would decrease. This does not, however, have anything to do with the scarcity or abundance of capital in the Schumpeterian sense. Capital will be limited by the amount of accumulated money wealth (from past profits) and the amount by which it is possible to expand credit within the system. The function of capital, then, is not production, but only the means by which entrepreneurs may withdraw the factors of production, including labor, land, and capital, in the Keynesian sense, from other firms.

It will be remembered that the two ultimate factors of production in The Theory of Economic Development were labor and land. Keynes does not disagree with this point of view, but to him, labor is a great deal more important than land.

24. Schumpeter would probably say, however, that the expected profit was much more important than the rate of interest, in determining the quantity of investment.

"I sympathize, therefore, with the pre-classical doctrine that everything is produced by labour, aided by what used to be called art and is now called technique, by natural resources which are free or cost a rent according to their scarcity or abundance, and by the results of past labour, embodied in assets, which also command a price according to their scarcity or abundance."²⁵

It would seem that there is no similarity between what the two writers consider to be the nature of capital. There is, however, one possible case in which the two theories seem to meet, despite the differences in the definition of capital. The case is outlined by Keynes and may be summarized.²⁶ We assume first, a rate of interest consistent with a rate of investment which corresponds to full employment. The State then adds to the stock of capital until it approaches a saturation-point at a rate such that no disproportionate burden is placed on the present generation. On such assumptions, and with a population which does not increase rapidly, Keynes suggests that the marginal efficiency of capital could be brought to zero within one generation. At this point, we should be in, what Keynes calls, a quasi-stationary state. In such a state change and progress would come about only through changes in techniques, taste, population and institutions. The products of capital would sell at a price just covering the labour, land, etc., embodied in them, with capital receiving a zero net return.

25. Ibid. Italics Keynes's.

26. Ibid., pp. 220-221.

Such a State is very close to that envisioned by Schumpeter in his circular flow. In both the Keynesian and Schumpeterian stationary states, producers' goods exist and perform the same function, i. e. the production of consumption goods. In neither state do these producers' goods, whether you call them capital or producers' goods, receive a return as such.

UNEMPLOYMENT IN THE TWO SYSTEMS

The Keynesian system, as we have so often said, is an attempt to formulate a theory of output determination. Perhaps more important, as the title of his book, The General Theory of Employment, Interest and Money, would indicate, is the determination of various levels of employment. This, however, is simply a matter of emphasis or interest, for the two (employment and output) are, as we have shown,²⁷ assumed to be uniquely correlated. Professor Lange has attacked the Schumpeterian system for a failure to provide any such theory of employment.

"The real weakness of his theory appears to be...the lack of an adequate theory of employment (in the sense of Mr. Keynes) to serve as a basis for the theory of the business cycle."²⁸

The most obvious criticism of this statement is that a theory of employment does not constitute a necessary basis for a theory of the trade cycle. We may go further and say that in neither Keynes nor Schumpeter is such a theory advanced

27. See p. 4n of this manuscript.

28. O. Lange, Review of Economic Statistics, November, 1941, p. 192.

as a causal basis for the cycle.

Perhaps it is doing Mr. Lange an injustice to claim that this is what he meant, for in the paragraph which follows he seems to mean something quite different:

"The fluctuation of the level of employment (and of the degree of the utilization of resources) is our primary empirical datum about the business cycle. As long as it is not explicitly connected with the theory and assigned its due role, Professor Schumpeter's theory must be regarded, at least, as incomplete."²⁹

Mr. Lange's criticism would seem, then, to be directed at the applicability of the Schumpeterian system, for it is not at all necessary that a theoretical model, to meet the tests of logic and consistency, conform to reality. Without becoming involved in any arguments, as to whether the problem of employment is more important than some others discussed by Professor Schumpeter, we can agree that the problem does not in his system enjoy the prominence it does in Keynes's. This is not to say that the two men view unemployment in any markedly different manner. It will be necessary that we examine the matter a little more closely before making any definite decision as to either their similarity or dissimilarity.

An excellent starting place for our inquiry is found in the choice of definitions accorded unemployment by Keynes and Schumpeter. In Keynes we find a very definite distinction made between frictional unemployment and what is defined as

29. Ibid., Italics mine.

involuntary unemployment.³⁰ Schumpeter, on the other hand regards all unemployment as frictional. The seeming difference is deceptive.³¹ Schumpeter, as we know, is attempting to explain the process of economic development via innovations. We have reserved our discussion of the business cycle for the following chapter, and it is, therefore, necessary to ask the reader to accept for the moment the Schumpeterian contention that innovations are the ultimate cause of such cycles. Innovations produce unemployment, because it is impossible for the economic system to instantaneously adjust itself to the disturbances they engender. That is to say, some old firms will be forced out of business by the new innovating firms which spring up along side them. There is no reason to suppose that the resources formerly employed by these old firms will be instantly reemployed by the new. We have thus introduced cyclical and technical unemployment and both are regarded by Mr. Schumpeter as frictional.

Further

"Imperfections of both competition and equilibrium... may account for the presence of unemployed resources independently of the cyclical process of evolution."³²

30. See The General Theory, p. 6.

31. The following argument draws heavily upon E. G. Bennion's "Unemployment in the Theories of Schumpeter and Keynes," American Economic Review, June 1943, Vol. XXXIII, although all errors of interpretation or of added arguments rest solely at our door.

32. Business Cycles, p. 161.

The differences of definition do not now seem so apparent. What Schumpeter means to include under the term frictional is a good deal broader than the meaning attached to the same word by Keynes. Moreover, since the Keynesian involuntary unemployment is, at least in part, the result of imperfections of both competition and equilibrium, the two theories are not so different from the standpoint of definition.³³

We have shown that both men are talking about approximately the same thing when they speak of employment, and we have seen that unemployment has a definite place in both systems. Professor Lange did not, therefore, mean that Schumpeter takes no account of unemployment. What Lange did mean was that Schumpeter has not provided any unique method of determining the level of output and/or employment by the functional relationship postulated for the system, i.e. the quantity of money, the schedules of liquidity preference, the marginal propensity to consume and the marginal efficiency of capital.

That Schumpeter would agree to this, we have no doubt at all, for he has written

"We have seen that there is no unique or simple relation between employment (number of hours worked per week) and

33. The Keynesian wage rigidity is a result partly of imperfect competition, since it is mainly the influence of unions that prevents money wage reductions. From the standpoint of equilibrium, unemployment may accompany many equilibrium points which are imperfect only in the sense that they are not full employment equilibrium. Schumpeter defines a concept very similar to Keynes's involuntary unemployment, which he calls Vicarious Unemployment (See Business Cycles, p. 513).

output, and that the latter is not proportional to, or measured by, the former. This is a consequence of the very nature of economic evolution and becomes obvious as soon as some of the conditions for proportionality are stated: production functions would have to be invariant in time and relative prices of factors would have to be constant."³⁴

We have arrived at the heart of the matter. As Mr. Bennion has said, if Schumpeter's schema contains an inadequate theory of employment, Keynes's contains a masterful superstructure without a foundation on which it may rest.³⁵ By maintaining production functions invariant, Keynes has excluded the capitalistic process on which the Schumpeterian system is founded. The argument may be summarized. Assume a symmetrical curve devoid of trend and possessing the property of unchanging production functions. The curve represents fluctuating employment, money and real income, all of which move together. Under such assumptions, average real income would be unchanged from cycle to cycle, and net investment for one complete cycle would be zero, i.e. investment plus consumption in the upper half of the curve is exactly offset by disinvestment and decreased consumption in the lower half. It is unlikely that the Keynesian determinants could continue to assume values which would perpetuate this condition yielding unemployment equilibrium. That is to say, without reference to dynamic factors, such as changing production functions, there is no reason why the system should not adjust to some

34. Business Cycles, pp. 510-511. Italics supplied.

35. Loc. cit., p. 339.

permanent equilibrium, either at full or partial employment, and remain there. Further the Keynesian determinants (liquidity preference, marginal efficiency of capital, and the marginal propensity to consume) rest very largely on a psychological basis. Such a basis, in and of itself, almost necessarily posits change. That is to say, the marginal efficiency of capital and the liquidity preference schedules are both derived from expectations as to the future course of events. If there are no ultimate factors (changing production functions) making the economy dynamic, then there is no basis for these determinants. What point in hoarding if the future is certain? Could the marginal efficiency of capital move at all? Obviously what Keynes has done is brought changing production functions in 'the back door.'

The Schumpeterian system has at its very core changing production functions in the form of innovations. Does this mean, then, that Keynes by introducing changing production functions, even if by the back door, has allied himself in reality with the Schumpeterian claim expressed above, that there is no unique relation between output and employment? Are we to say now that the Keynesian employment determination is not valid after all?³⁶ We must answer in the negative. We are back at the position previously explained, when we were comparing the theories of interest.

36. R. Clemence and F. Doody in The Schumpeterian System have said in this connection that "one innovation in the

Keynes is thinking primarily of unemployment at a given point in time. More specifically, Keynes holds his production functions rigid, but only for the very short run. For such a time period there is no reason why this may not be considered reasonable and proper. We have Schumpeter's own confirmation on this point. Speaking of the unique relation between employment and output, as dependent on invariant production functions and constant relative fact or prices, he says

"Neither can possibly be fulfilled for any length of time, such as the period of a Juglar. But both may be fulfilled approximately in the very short run..."³⁷

It is now possible to state our conclusions. First of all Professor Schumpeter very definitely does not provide a method of determining the volume of employment at any particular point in time. In this sense his theory may quite properly, and without harm to that theory as such, be considered inadequate. On the other hand, Keynes just as definitely does provide an adequate theory of employment and output determination for the very short run. At the same time, it must be admitted that Keynes does not provide an adequate explanation of employment through time, while Schumpeter does.

Keynesian model would spell goodbye to the whole structure." (p. 59) It is their contention that in a world in which innovation exists, changing production functions will continuously destroy the unique relation of employment and output. In the writer's mind, however, all that need be valid for the Keynesian system is that the relation between output did exist at any one moment of time.

37. Business Cycles, p. 510.

With one assumption it is possible to make the two theories complementary. That assumption is that economic development has not ceased. If we reject this in favor of permanent stagnation, then we have literally defined Schumpeter's system out of existence. Accepting the assumption, however, and it seems reasonable at this time, we can then proceed to say that Schumpeter's theory of development will explain the cause and direction of employment through time, and that Keynes's functional relations may be used to explain the volume of employment at any given point of that time.

THE THEORY OF PRICES

Because we have not as yet devoted any space to price theory to any significant degree in either theory, we shall begin by very briefly outlining the two theories. To save time we shall outline Schumpeter's theory first and then attempt to work out our comparison alongside our development of Mr. Keynes's theory.

The Schumpeterian monetary equation may be written as follows: $E = M \cdot U = p_1 m_1 + p_2 m_2 + \dots + p_n m_n$.³⁸ The income of the period being considered is represented by E, M is the quantity of money, U its average velocity of circulation and p_1, p_2

38. The equation is taken from Schumpeter's article "Das Sozialprodukt und die Rechenpfennige," but because the original article was not available, we have relied on partial translations by W. F. Stolper, "Monetary, Equilibrium and Business-Cycle Theory," Review of Economic Statistics, 1943, Vol. XXV.

and p_m the prices of quantities m_1 , m_2 , and m_n . The quantity of money is defined as anything that will pass as money.³⁹

There are some reservations, however, on what this may be taken to mean. Money that may be used to create money, temporarily idle balances and minimum reserves of banks and individuals are excluded.

"The theory of the sum of total income does not deal with the total circulating medium. For this theory, and for the monetary nexus, only that part of the circulating medium is relevant which in every economic period is spent by the producers on the factor markets, is received by the furnishers of the factors of production, and is then brought into the market for consumers' goods....Only this sum enters into the sum of money incomes, and only it confronts the stream of consumers' goods and affects the value of money."⁴⁰

The velocity of circulation (U) is defined somewhat differently than the usual quantity theory interpretation. Briefly stated it is the number of times money is received and spent as income on consumption goods within any given period. Despite the differences in definition as regards the components of the equation, it is a simple truism without any causal meaning. A change on the left side of the equation supposes a change on the right. The quantity of money (M) is considered to be the active factor, while velocity (U) is assumed to be fairly constant.⁴¹ It follows, therefore, that U remaining constant, an increase in M will mean an increase in production or prices

39. Ibid., p. 89.

40. Ibid., p. 89. The quotation is also a Stolper translation from the article cited.

41. Ibid., p. 90.

(pm). In general, says Stolper, an increase in M effects production via the fact that all prices do not change in the same degree and at the same time. This fits in very nicely with Schumpeter's theory of development. In the circular flow there is no net investment, and so the emphasis is, as shown above, strictly on consumption. Innovations are also neatly taken care of, because prices do not all change in the same degree at the same time. Factor prices are assumed to lag behind product prices. This creates the price differential, which we have described in chapter two as entrepreneurial profit. When the quantity of money ceases to rise, then a new equilibrium will be established with these profits eliminated in the manner described earlier.

The Keynesian theory of prices has been called the contra-quantity theory of causation. This appellation springs from the fact that, as opposed to the Schumpeterian theory just examined, changes in the quantity of money (M) originate through changes in prices and not vice versa. The emphasis has been shifted from the left to the right hand side of the equation.

In the special case (to Keynes) of full employment, such as the circular flow, there would seem to be no substantial disagreement regarding price theory. In such a situation prices are determined for the firm by factor costs and by the principle of increasing costs (diminishing marginal productivity)⁴²

42. See The General Theory, p. 294.

connected with expanded production. This jibes very well with Schumpeter's circular flow where, it will be remembered, marginal cost equals marginal revenue.

In the present writer's opinion one of the real differences between the two theories arises out of differences over a concept already discussed, the theory of interest, because Keynes regards interest as being a link between the present and the future. The difference is centered in Keynes's pre-occupation with a less than full employment state of equilibrium. Under such conditions increasing the quantity of money will not effect prices, because there exist idle resources. The increased quantity of money will, however, have important repercussions on the rate of interest. If the liquidity preference schedule remains constant, then the rate of interest must of necessity fall. If it falls below the marginal efficiency of capital, then investment will be stimulated. Idle hoards and peoples' desire for balances, which Schumpeter excluded from his definition of M, play an important part in the Keynesian theory.

Schumpeter has recognized the same phenomena as we indicated when discussing the rate of interest. In discussing the effect of an increase in the quantity of gold, which we may assume to be the same as an increase in the quantity of money, he has this to say:

"All these factors together, namely the decline of the rate of interest, the fall in the real content of

debts and fixed interest burdens...create a tendency toward expansion of all firms...⁴³

To expand the Keynesian theory a bit more we should note that, as might be expected, he is interested in the effect of changes in the quantity of money on output. If the wage rate, which is the major factor in price, is assumed to be rigid and there are idle resources, then velocity being a constant, the effect of an increase in money must mean an equal or proportionate increase in output. This must be true since output is the only variable which remains free to move under these conditions. Under these assumptions the Schumpeterian equation will give the same result. That is, if the price level is assumed to be rigid, then an increase in M will mean either an increase in output or velocity. If we hold velocity (V) to be constant, the results are identical with those of Keynes.

In this simplified form there do not appear to be any real differences between the results possible with both theories, although the Keynesian causal path is different from that taken by Schumpeter. Keynes goes on, however, to introduce some important qualifications. The above increase in output proportional to the increase in money will hold, first of all, only if effective demand also changes in exact proportion to the quantity of money.⁴⁴ The general case will be that

43. Stolper, Ibid., p. 90. His translation of Schumpeter.

44. See The General Theory, p. 296.

the increase in effective demand will spend itself partly on increase employment/output and partly on price rises. The price level will not, strictly speaking, be rigid then, but will rise gradually with employment.

The main factors behind this gradually rising price level may be briefly reviewed. First of all, as unemployment declines, the bargaining position of workers improves, and wages will rise. Secondly, increased demand over the short run will result in diminishing returns because of the inability of the quantity of capital, etc., to change quickly. Thirdly, we encounter bottlenecks in production. That is to say, some industries will exhibit inelastic output with respect to increased demand.⁴⁵

Now Mr. Schumpeter does not have any such complete theory of effective demand as Keynes. Whether this should be counted as an error of omission or of analysis, we are not prepared to say. The factors just named, however, which are behind effective demand's failure to change proportionately with output, are certainly not in disagreement with anything Schumpeter might have to say. On the whole they are, fundamentally, conditions brought about by frictions, the imperfections of competition and the inability of the system to adapt instantaneously to change. As such, the writer cannot see any reason why Schumpeter should argue that the effects Keynes attributes to them would be other than those described.

45. See D. Dillard, The Economics of John Maynard Keynes, pp. 228-232.

CHAPTER IV

THE OVERALL VIEW

We come now to the final chapter of this work in which as we indicated earlier we intend to compare the complete systems of both economists. In the preceding chapter we have briefly compared what we considered to be the essential components of both systems. We have reserved the discussion of the business cycle until now, although it could be objected that the cycle is really only a component of either system. We have no wish to argue with such an objection. Our decision was admittedly arbitrary, although in the case of Professor Schumpeter we do believe that his whole system is aimed at explaining the capitalistic process which he believes to be necessarily cyclical. Because we have not previously discussed either man's theory of the cycle we will begin with a brief summary of both.

THE KEYNESIAN THEORY OF THE CYCLE

The explanation of the trade cycle offered by Lord Keynes centers in the concept of the marginal efficiency of capital.¹

1. What little Keynes has to say about the trade cycle is contained in Chapter 22 of The General Theory. The explanation is meant to be suggestive and should be considered as incomplete (See p. 313).

We shall begin with the economy on the point of being launched into period of boom conditions. (Since the marginal efficiency of capital is determined by two elements, the supply price of new capital and the state of expectations we should examine both of these elements.) In regard to the supply price of capital assets we can assume that it will be relatively low since there is as yet no stiff competition for capital. The capital industries themselves are not as yet operating at capacity and so may be assumed to be operating as yet along the decreasing costs area of their cost curves. Expectations, the other element in the marginal efficiency of capital, are extremely optimistic. Businessmen believe that economic conditions are good and will continue to improve indefinitely. In short the marginal efficiency of capital is high. Interest rates, the other determinant of investment, are probably low. With peoples' expectations optimistic, the amount of money they will want to hold (liquidity preference) decreases. This is so because people believe that the prices of investments are going to rise. This is the same thing as saying the rate of interest on these investments will fall. It is therefore more profitable to switch into assets and profit from the rise in prices rather than stay in money at a falling rate of return.

Conditions are thus very propitious for new investment. Each new injection of investment results in a great increase in income because of the multiplier principle. We are in a cumulative period of expansion with employment and income

increasing rapidly. What causes this period of expansion to end? The main factor which brings about the down turn, or what is known in cyclical theory as the crisis, is the sudden collapse of the marginal efficiency of capital.

What brings about this collapse in the marginal efficiency of capital? In the realm of psychological factors the bright wave of optimism gives way to some skepticism as to the ability of capital to maintain its present high return indefinitely. Such skepticism will cause some businessmen to hold back on investment in anticipation of price declines. In the realm of real factors the investor finds himself caught in the old profit squeeze. That is to say, his costs have continued to rise and are still rising. The market, however, is being flooded with the goods that were the ultimate end of the investment started at the inception of the boom. Therefore, the price of his products are being forced down. The entrepreneur who began his investment with an expectation of a 7 or 8 per cent profit finds his actual return is perhaps nearer 3 per cent. When this disillusionment strikes it hits with sudden and catastrophic force.² The optimism which characterized the boom turns overnight into excessive pervading pessimism.

With the collapse of the marginal efficiency of capital the rate of interest also exhibits a marked rise.³ The reason

2. See The General Theory, p. 316.

3. Keynes makes quite a point of insisting that the increase in liquidity preference and the consequent rise in the rate

is the reverse given for its decline in the early stages of the boom. Since people expect prices to fall and, therefore, the rate of interest on investments to rise, they fly to money. The downswing also exhibits a cumulative characteristic. Each successive fall in investment brings about, via the multiplier, a greater fall in income.⁴ The limits of such a contraction are reached when income equals consumption.

We shall conclude our short discussion of Keynes's ideas on the trade cycle by some observations on the length or period of the average cycle. There are, according to Keynes two main factors that will determine the length of the cycle. The first is the length of life of durable assets in relation to the normal rate of growth.⁵ By this is meant the average time necessary for depreciation and obsolescence to raise the marginal efficiency of capital above the rate of interest via scarcity. This interval, "may be a somewhat stable function

of interest occurs after the crisis. High interest rates might therefore retard the boom, but he questions the efficacy of low interest rates to affect the depression. See The General Theory, p. 316.

4. The nature of the multiplier will tend to help level off the boom and cause income to fall at an increasing rate in the downswing. This is so because as income increases, the marginal propensity to consume declines dampening the multiplier effect. While in the downswing with income decreasing the marginal propensity to consume rises, which increases the effect of the multiplier.

5. Ibid., p. 317.

of the average durability of capital in a given epoch."⁶ This standard period will vary as the characteristics of the epoch vary. A slowing of the rate of population increase will cause the period to lengthen because the demand for capital to meet increased population is decreasing.

The second factor limiting the length of cycles is the carrying costs of surplus stocks. When the downturn starts prices fall so rapidly that if some producers were to keep their inventories moving they would have to do so at a loss. Rather than endure such losses, businessmen will hold back in the hope that prices will rise eventually. Actually, of course, this is self defeating, since it means less employment and less income, etc., on and on. The length of time such inventories will be held naturally depends on the costs involved in storing goods, tying up money in assets, etc.

Taking both facts into consideration. Mr. Keynes concludes that the length of time which will be established and which will display a fair degree of regularity will be between three and five years.⁷ This conforms well enough with orthodox cycle theory as far as short run cycles are concerned, the cycle identified being that generally known as Kitchin's.⁸

6. Ibid., p. 318.

7. Ibid., p. 317.

8. See Estey - Business Cycles, p. 15.

MR. SCHUMPETER'S THEORY OF THE CYCLE

Because of limitations of space, our summary of what Schumpeter has to say about the trade cycle will be nearly as brief as our summary of Keynes. This is deceptive. The Schumpeterian theory is much more complete than the one chapter Lord Keynes devotes to the subject. We shall go into this in more detail when we contrast the two theories, but it would be well to keep the above in mind.

We may conduct our examination of Schumpeter's theory of the cycle on two different levels. We are interested mostly in the second approximation but will outline first the theory of cycles in the pure model, the circular flow concept described earlier. As we know, in the beginning such a system is in a state of perfect equilibrium. Along comes our innovating entrepreneur who succeeds in establishing his new firm in the midst of a hostile world. He is followed by a host of imitators financed by a great expansion of credit. The great expansion of credit and the investment activity creates prosperity. At some point the rush of imitators will exhaust the possibilities of further profitable opportunities. As a result, borrowing will diminish. The expansion will begin to slow down. As the firms who first began to innovate start paying back their loans there will be a further impetus to deflation of the monetary expansion. At about the same time the market begins to be flooded with the goods produced by the

new firms. Depression results, and during this period the adjustments necessary to bring the system back to a new equilibrium are carried out. Those firms which are no longer able to compete will disappear from the economic scene. For those who are left there is a need for a complete reorganization.

"A great many values are annihilated; the fundamental conditions and presuppositions of the plans of the leading men in the economic system are changed."⁹

What this will mean practically is that some of the new firms will become leaders; others will contract, modernize, and otherwise adjust to the new equilibrium. We have in the pure model only a two-phase cycle of prosperity and depression. As soon as the necessary adjustments have been completed, the system is at a new equilibrium point. At this new equilibrium, real income is greater than that at the previous point, because the innovation has increased output, relative to employment.¹⁰ The price level is lower, too, because competition has forced prices down until they equal marginal costs under a new production function (the innovation) which is more efficient. The length of the cycle phases will depend on the type of innovation that is introduced and the resultant necessary period of adjustment. The building of a vast system of railroads, for example, would take much longer than a new way of making shoes.

9. The Theory of Economic Development, p. 127.

10. These elements are taken from R. Clemence and F. Doody, The Schumpeterian System, p. 12. The following description of that second approximation leans heavily on Chapter 3 of the same work.

The Second Approximation is an attempt to bring the theory closer to reality. It is a direct result of adding to the Pure Model six new elements. They are (1) the secondary wave, (2) successive fluctuations, (3) growth, (4) the spreading of credit creation, (5) induced investment, and (6) imperfections of competition and of equilibrium.¹¹

The primary wave is that just described in our discussion of the pure model, having as its basis the introduction of innovations. The secondary wave is at least quantitatively more important than its primary parent. Mostly it is a result of reactions to the primary wave. The rise in investment brought about by the new firms, brings with it a rise in aggregate income. Part of this increase in income will be channeled into consumption spending. This will cause an increased demand for the products of both old and new firms, which in turn will lead old firms to attempt to expand to meet the new demand. Similarly, people in all types of business make their plans on the assumption that present conditions will be extended into the future. Speculation and excess of all types follow necessarily until the secondary wave has obscured the underlying factors that were responsible for its existence. Moreover, the characteristics of the secondary wave we have just described lead readily into a boom.

11. Ibid., p. 247.

The downturn will come when the primary wave upon which the whole boom actually rests turns downward according to principles outlined in our discussion of the pure model. There is a fundamental difference, however, between this downturn and that experienced under pure model conditions. In the pure model the recession was primarily one of adjustment to the new conditions created by the innovation. The secondary wave, however, has created a great many positions which have no real foundation in the underlying data. They are completely dependent on the continuance of the secondary wave boom. Once the downturn starts, these positions become untenable, resulting in an abnormal liquidation. This abnormal liquidation will force the economy downward, through recession, into depression. Firms which should, under the recession conditions of the pure model, easily survive are forced into economic limbo; sound positions, too, are liquidated. The depression ends partly because readjustments are gradually made and partly because of self-generating factors, i.e. capital equipment finally wears out, the interest rate falls, etc., and the system enters the recovery phase of the cycle. We thus have a four-phase theory of the cycle familiar to cycle theorists. One thing must be kept in mind. Every cycle is to Schumpeter a historic individual. There is no necessary regularity or periodicity to any group of cycles. It is not even necessary that all will follow the pattern we have just outlined. To understand any one cycle, we must know the conditions at the time of its

inception, the nature and type of reactions, and finally the kind of adjustments that are made to any new conditions it produces.

It remains to explain the other five elements listed above. By successive fluctuations we mean that rather than starting from a position of perfect equilibrium, we recognize now that all new cycles start in

"...an atmosphere of imperfect routine containing innovations incompletely worked out, undigested elements of previous cycles, faulty adjustments resulting from errors, and so on..."¹²

Growth is the result of population changes and in aggregate savings corrected for changes in the purchasing power of money.¹³ Population may influence the course of cycles by its effect on demand. Savings will exert their influence either by financing innovations or as idle balances which reduce demand.

It will be remembered that in the circular flow the creation of credit was necessary to give the entrepreneur control over the means of production. Once begun, however, credit creation spreads throughout the system, becoming an instrument for financing all business. Thus, the expansion of positions which later become untenable, because they are unrelated to the primary wave, is made possible.

12. Ibid., p. 14.

13. Ibid., p. 15.

Induced investments are those investments which are brought into being as a result of an innovation. They are not, however, necessarily connected with the innovation. The increased aggregate monetary demand it produces makes profitable investment possible in many corners of the system. A particular kind of innovation, such as railroads or automobiles, may make a huge steel industry a necessity, and so on.

The assumptions of perfect competition and equilibrium, so essential to the circular flow, just do not exist in the real world, and so must be abandoned. By introducing imperfections of this kind, we make the process of adjustment more difficult.

MULTICYCLES

This concludes the purely theoretical part of the Schumpeterian cycle, but there is one more point to be made. As we have said, cycles of varying lengths and periodicity are possible under our analysis. There are three fundamental factors that will determine the length and nature of each cycle.¹⁴

First, and most obvious, different innovations would require different lengths of time for their introduction. Secondly, some innovations will give rise to a whole sequence of cycles associated with it and of the same type. As an example we could use the development of the automobile and

14. Ibid., pp. 18-21. The following draws heavily from this section of the book.

the whole host of industries, such as the rubber business and highway construction, that grew up as a direct result of it. Finally, a number of innovations may be interdependent, forming part of a larger process that represents a real phenomena in and of itself. The Industrial Revolution is offered as an example. Generally this type of wave is associated with all pervading upheavals in the whole social frame work.

The insufficiency of data and the shortness of the period covered by it have made historical identification of such cycles extremely difficult. Three cycles which have gained fairly wide acceptance have been integrated with the Schumpeterian theoretical system, although that system is not dependent on either the acceptance or rejection of any of these cycles. The cycles used are the Kondratieff, the Juglar and the Kitchin, having average periodicities of about fifty-five, eight, and three and one-fourths years respectively.

The interrelationship of these cycles are extremely illuminating from the standpoint of understanding the workings of the Schumpeterian system. Underlying the Juglar is the Kondratieff. The phase of the Kondratieff will condition the fluctuations of the Juglars. That is to say, in the upswing of the Kondratieff the prosperity phases of the Juglars will be more intense, and in the Kondratieff downswing, Juglar depressions will be accentuated. Equilibrium in the Juglars is, at best, a partial adjustment to the recent innovations.

In terms of our secondary wave, such interrelationships may, quite logically, completely obscure the primary wave effects. If a Juglar is in the strong upswing of a long wave, then a downturn of its own primary wave will not be enough to cause the secondary wave to follow it. Finally, this separation into three types of cycles is admittedly a practical device. Other cycles probably do exist, and their effects will make identification of all individual cycles and their causes impossible.

The Kitchins are related to the Juglars in the same way as the Juglars are related to the Kondratieffs. The possibility is left open that Kitchens may not be real innovation cycles but only adaptive fluctuations.

We are now ready to begin our comparison. The first and most important point we wish to make is that as cycle theories, there is simply no comparison at all. Keynes's theory is not logically self-contained. That is to say, his determinants cannot indefinitely take values that will yield a cycle.¹⁵ If Keynes is to have a cycle theory at all, it is necessary that he introduce, albeit implicitly, some underlying dynamic theory as a foundation for his own superstructure. The Schumpeterian system is logically self-contained in the sense we have said Keynes's was not. There is no vital reason why

15. We have mentioned this before in discussing production functions. See E. G. Bennion, "Unemployment in the Theories of Schumpeter and Keynes," American Economic Review, June 1943, pp. 336-337.

the Schumpeterian system should be used as background for the Keynesian system (there are other dynamic theories), but there is also no reason why it should not be so used. Infact there is some evidence that such a procedure would not meet with the disapproval of Lord Keynes. In his Treatise on Money, he stated emphatically that

"Schumpeter's theory of innovations was unreservedly accepted...as the moving force of the capitalist fluctuations."¹⁶

It is true that no such prominent position is given Schumpeter's innovations in The General Theory; in fact, they are not even mentioned. This does not mean that Keynes had repudiated his earlier acceptance of such a theory. Keynes was not, primarily, concerned in The General Theory with considering the capitalist system's fluctuations. His main preoccupation was with the depression phase of the trade cycle and an explanation of the various levels of unemployment that existed in that atmosphere. It was necessary, if his functional relationships were to produce the determinant levels he was seeking, that he introduce certain rigidities among them, production functions which excluded innovations. In the writer's opinion, however, Keynes understood that such conditions could only hold in the short run. But it is equally true that such a short run period was all that really concerned him for the

16. L. Klein, The Keynesian Revolution, p. 16. A footnote referring to Schumpeter is omitted.

problem he was attacking. In short we can find no reason to believe he would have discarded his early approval of Schumpeter's doctrines had he been developing anything like a complete theory of the capitalistic process.

INNOVATIONS AND THE MARGINAL EFFICIENCY OF CAPITAL

The fundamental cause of an increase in net investment in the Schumpeterian schemata is the introduction of innovations. In the Keynesian system, a rise in the marginal efficiency of capital over the rate of interest receives credit for the same function. Are the two incompatible? we think not. First of all, the marginal efficiency of capital is not basic in and of itself. By this we mean that the causes behind movements in the marginal efficiency of capital are not explained by that concept. Let us examine this. The two determinants of the marginal efficiency of capital are the supply price of new assets and the expectations regarding the rate of return over costs. Of these, expectations is probably the more important. What is it that causes expectations to rise? About the only cause one can gather from Keynes is that future prices, relative to costs, are expected to be higher than they now are.¹⁷ But this does not tell us why they will be higher.

It is probably obvious to the reader by now that the point we are leading up to is that if we introduce innovations,

17. See The General Theory, Chapter 11.

then we can supply the why behind rising profit expectations. Innovations, as we know from chapter one, always give the promise of a return over costs which we have called entrepreneurial profit. This is not to say that only those investments which could be considered innovations have relevance to the marginal efficiency of capital. Keynes's concept applies to any type of new investment. This presents no difficulty for we have explained above the manner in which profit expectations spread throughout the system via the secondary wave.

One more point needs clarifying. Schumpeter asserts that innovations always cluster around a point of equilibrium.¹⁸ This is obviously ^{not} equilibrium in the general Keynesian sense, for Keynes postulates a large number of possible equilibrium positions up to and including full employment. In the circular flow a perfect equilibrium starting point would be possible. In the real world with which Keynes is primarily concerned, however, Schumpeter supposes such a point to be most nearly reached at the end of the recovery phase of a Kondratieff cycle.¹⁹ What are the conditions that characterize such a point? First and most important it is a period of generally

18. See The Theory of Economic Development, pp. 223-233.

19. See p. 93 above.

rising prices. Prosperity outruns depressions, and optimism regarding the future is prevalent. Now it is true that Keynes identifies no such specific point, but aren't the conditions we have described very similar to those he poses as prerequisites for a rise in the marginal efficiency of capital? We believe they are.

In conclusion, let us say that while the theory of innovations may not be the only basis for the marginal efficiency of capital, it seems adequate. While the Keynesian theory does not go beneath the surface to causes, the marginal efficiency of capital can be used very neatly to explain the mechanism of innovations which are themselves causal.

THE LENGTH OF CYCLES

Mr. Keynes has identified his cycle with the so-called Kitchin cycle of about 40 months duration. Under the short run conditions, to which he confined his analysis, it is not difficult to see why this was the one cycle which was consistent with his aims. Schumpeter, also, has seen fit to identify his theory with Kitchin's, but not to the exclusion of Kondratieff's and Juglar's, which he considers to be more important.²⁰ Moreover, if Professor Schumpeter's analysis is correct, then the shorter Kitchin cycle will contain and be conditioned by elements of both other cycles. If our reasoning

20. See Clemence and Doodey, The Schumpeterian System, p. 21.

on this point is correct, then it would seem to us that a good deal of the neat preciseness of the Keynesian explanation is open to at least some doubt.

POLICY

Probably no other result of the Keynesian analysis is better known than that it lends itself admirably to a positive type of policy. Such a result was by no means accidental. Keynes was a brilliant economist with a rare insight into the workings of the capitalist system. The problem he saw there was that of vast unemployment in the midst of tremendous capital accumulation. Such a situation was to Keynes absolutely intolerable. His insight gave him, perhaps almost intuitively, the answer to the problem or at least an answer. To have stated that answer in the usual language of the day would not have been enough. It is perhaps unfortunate, but true, that to gain a real hearing it is necessary to startle, to insult, and to confound. There can be no doubt that Keynes has gained his hearing. More important, The General Theory, at least, seemed to reduce economics once again to the level where all could understand. If policy suggestions are to gather in wide backing, this is absolutely necessary.

Mr. Keynes has gained his point, but at the expense of nearly obscuring much that was good in the long history of economics that had preceded him. It is very probable that Keynes did not mean that his analysis should be carried so

far—that he was not himself a keynesian. We have Schumpeter's opinion on the matter.

"The logic of the classical system is not really impugned (p. 278)."21

The theoretical was never as important to Keynes as the real.

"With Keynes, practical advice was the goal and beacon light of analysis..."22

Schumpeter, on the other hand, was not, at least in his two main works, Business Cycles and The Theory of Economic Development, concerned with policy implications at all. He was not interested in any one economic problem, but rather he tried to explain the nature and working of the whole capitalistic system. As we have indicated earlier, the Keynesian determinants can be used to explain a point in time within the Schumpeterian schemata. Whether or not the Keynesian policy implications would also be applicable, we should not care to say. This much we will venture. There seems to be throughout the 'house ^h Schumpeter built' a feeling that over everything hangs the mantle of natural law. Depressions with their concomitant unemployment may be bad, but the depression has a definite place in the system. Without it the deadwood could not be disposed of, nor the vital readjustments made.

21. J. A. Schumpeter, "John Maynard Keynes," The American Economic Review, September 1946, p. 516n. The italics are Schumpeter's, and page numbers refer to The General Theory.

22. Ibid., p. 504.

We shall conclude by noting that it was probably unfortunate that Schumpeter's main work should appear during the troubled thirties when all else was blanketed by the so-called Keynesian Revolution. His work stands in real danger of being shamefully by-passed. One last comparison which we feel certain will not be contested, both John Maynard Keynes and Joseph A. Schumpeter were men of their age and great economists.

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