Faculty Working Papers

KEYNES'S SHORT RUN THEORY OF EMPLOYMENT

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No. 1

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by

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The 34 years following the publication of Keynes's <u>General</u>
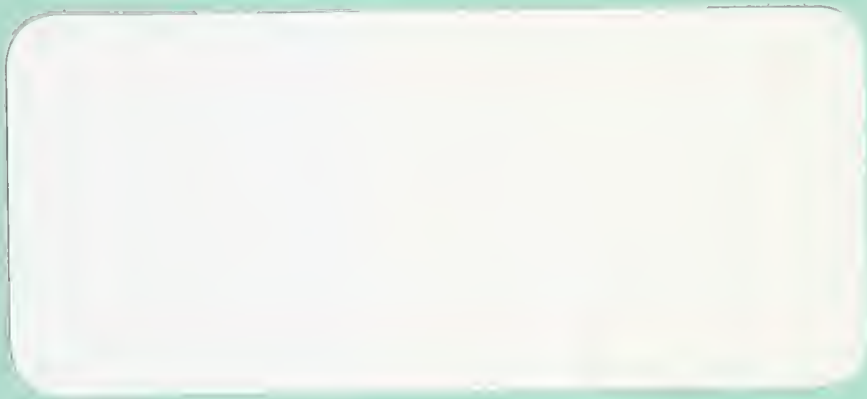<u>Theory</u> have seen a vast outpouring of journal articles, books,
monographs, and even magazine pieces explaining, extending,
criticizing, denying, interpreting, and misinterpreting what
Keynes wrote, meant to write, or should have written. So
vast is this literature, and so brilliant is a part of it, that
it is rather shocking to find that no account has ever been
given of Keynes's own incisive explication of his short run
theory of employment. The explication I am referring to is the
one given by Keynes in Chapters 3 and 5 of <u>The General Theory</u>
<u>of Employment, Interest and Money</u>. It is an explication that
has been totally neglected by the economics profession, but
yet one that is far more valuable, lucid, and substantial than
anything written in this area in the past three and one-half
decades.

To repair this unfortunate oversight and to demonstrate that
Keynes was much better at his work than any of the gaggle of
economists who in one way or another followed him, I shall simply
lay out the substantive parts of Chapters 3 and 5 and weave

them into a coherent model of short run employment.

In Chapter 3 of The General Theory Keynes provides the reader with two related though far from equivalent summaries of his short run theory of employment. He expresses these two brief accounts in terms of three macroeconomic relations: an aggregate demand function that is the sum of consumer and investment spending; an aggregate supply function that states the proceeds entrepreneurs must obtain from the sale of output if a given level of employment is to be maintained; and what we may call an "expected proceeds" function that relates the receipts entrepreneurs expect to receive from the sale of output to the volume of employment necessary to produce the output in question.

The first of Keynes's accounts runs as follows:

It follows that in a given situation of technique, resources and factor cost per unit of employment, the amount of employment, both in each individual firm and industry and in the aggregate, depends on the amount of proceeds which the entrepreneurs expect to receive from the corresponding output. For entrepreneurs will endeavor to fix the amount of employment at the level which they expect to maximize the excess of the proceeds over the factor cost.

Let Z be the aggregate supply price of
the output from employing N men, the relation-
ship between Z and N being written Z = ϕ (N),
which can be called the <u>Aggregate Supply</u>
<u>Function</u>. Similarly, let D be the proceeds
which entrepreneurs expect to receive from
the employment of N men, the relationship be-
tween D and N being written D = f(N), which can
be called the <u>Aggregate Demand Function</u>.

Now if for a given value of N the ex-
pected proceeds are greater than the aggregate
supply price, i.e., if D is greater than Z,
there will be an incentive to entrepreneurs to
increase employment beyond N, and if necessary,
to raise costs by competing with one another
for the factors of production, up to the value
of N for which Z has become equal to D. Thus
the volume of employment is given by the point
of intersection between the aggregate demand
function and the aggregate supply function; for
it is at this point that the entrepreneurs' ex-
pectation of profits will be maximised.[1]

Keynes's second and shorter summary is expressed in the
form of five separate points. They are:

(1)   In a given situation of technique, resources and costs, income (both money-income and real income) depends on the volume of employment N.

(2)   The relationship between the community's income and what it can be expected to spend on consumption, designated by D_1, will depend on the psychological characteristic of the community, which we call its propensity to consume. That is to say, consumption will depend on the level of aggregate income and, therefore, on the level of employment N, except when there is some change in the propensity to consume.

(3)   The amount of labour N which the entrepreneurs decide to employ depends on the sum (D) of two quantities, namely D_1, the amount which the community is expected to spend on consumption, and D_2, the amount which it is expected to devote to new investment. D is what we have called above the effective demand.

(4)   Since $D_1 + D_2 = D = \phi (N)$, where ϕ is the aggregate supply function, and since, as we have seen in (2) above, D_1 is a function of N,

which we may write $\chi(N)$, depending on the
propensity to consume, it follows that $\phi(N) -$
$\chi(N) = D_2$.

(5) Hence the volume of employment in
equilibrium depends on (i) the aggregate supply
function, ϕ, (ii) the propensity to consume, χ,
and (iii) the volume of investment D_2. This is
the essence of the General Theory of Employment.[2]

To understand these passages we need to attach definite
meanings to Keynes's aggregate supply function, $Z = \phi(N)$;
to $D = f(N)$, which Keynes calls an "Aggregate demand" function,
but which we shall call an "expected proceeds" function so as
not to confuse this relation with the sum of consumer and
investment spending; and to Keynes's concept of effective
demand, $(D) = D_1 + D_2$, which we shall continue to call an
"aggregate demand" function.

1. The aggregate supply function $Z = \phi(N)$ is a relation
between the level of employment, N, and a sum of money re-
ceipts, Z, that states the aggregate revenues producers
must receive from the sale of output if they are to maintain
given levels of employment and output. This function does
not state the actual receipts businesses will in fact receive
from the sale of output resulting from a given level of
employment; it simply expresses, for each volume of employment,

the minimal receipts which must be forthcoming to support various levels of employment.

To avoid placing too special a construction on Keynes, we shall suppose that perfect competition obtains in the product market. With this done it is argued that under conditions of perfect competition firms adjust their rates of output until marginal cost, (W/M) (where M denotes the marginal physical product of labor $\triangle Q/\triangle N$), equals the price of output P. Thus the following microeconomic condition holds for all producers in the economy.

(1) $P = (W/M)$.

Multiplying both sides of this equation by Q yields the corresponding macroeconomic equilibrium condition.

(2) $PQ = (W/M)Q$.

Since the product $(W/M)Q$ expresses the sum of money receipts businesses require in order to support a level of production Q, we may rewrite (2) as:

(3) $Z = (W/M)Q$.

In this statement, Z is the necessary sum of money receipts producers must realize from the sale of output Q if they are to maintain the level of output unchanged. The relation we

seek to define, though, is between the variables Z and N, not between Z and Q. To find this relation replace Q in (3) by the product AN, where A denotes, as before, the average product of labor. This substitution yields Keynes's aggregate supply function. It is:

(4) $Z = W(A/M)N.$

This equation states the minimal proceeds, Z, which producers must earn from the sale of output if the established level of employment, N, is to be sustained. If the actual flow of receipts accruing to businesses exceeds (falls short of) Z, then both employment and output will rise (fall) until equation (4) is satisfied.

It should be noted that the ratio (A/N) in (4) is the inverse of the elasticity of output with respect to employ-ment.[3] If we make the reasonable assumption that this elasticity is a constant,[4] then (A/M) will of course be a constant, and the graph of Keynes's aggregate supply function will be a straight line out of the origin as depicted in Figure 1. An additional property of this relation is that it is not defined for levels of employment in excess of N_f, the size of the labor force.

2. The expected proceeds function $D = f(N)$ states the proceeds D entrepreneurs expect to realize from the sale of
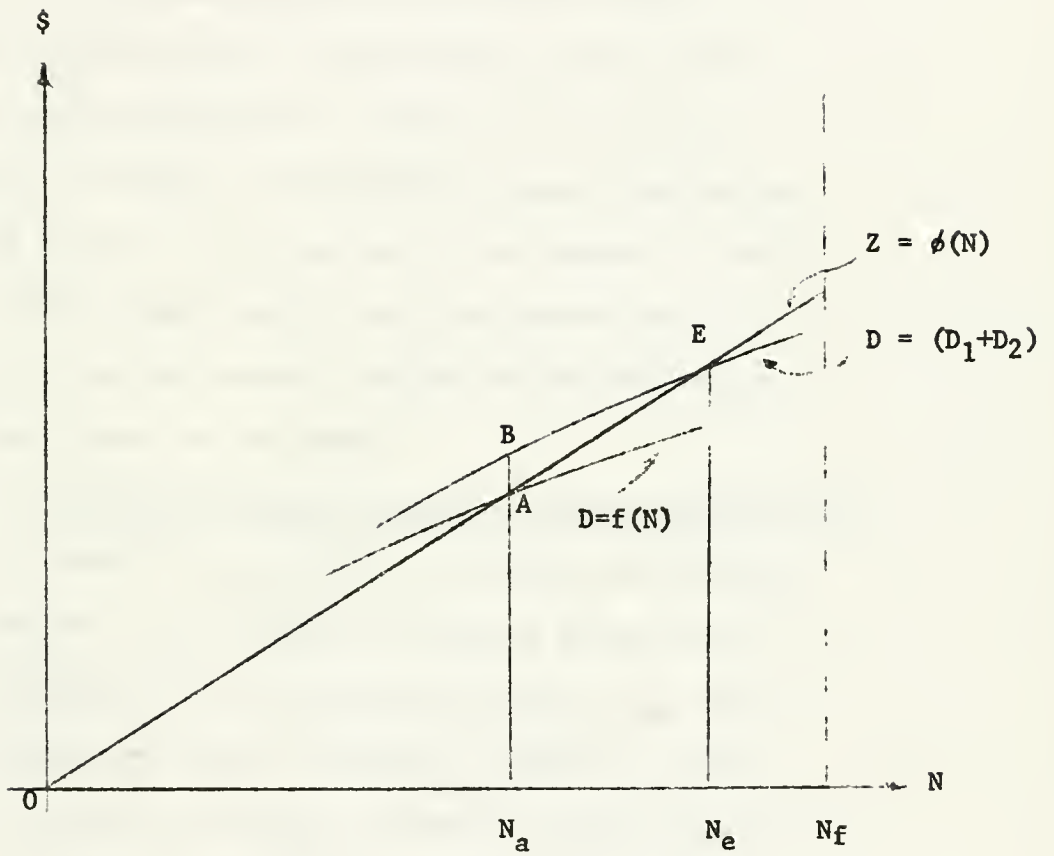
Figure 1

output resulting from the employment of a certain amount of
labor. These expected proceeds are simply the product of the
price expected by producers, P*, and the real output they
produce, Q. If we assume that the price they expect is a
diminishing function of the level of output, then both P*
and Q, and their product D are functions of the level of
employment. In Figure 1 the expected proceeds function has
been drawn concave to the abscissa for two reasons. First
because of the assumed inverse relation between expected
price and output, and secondly because of the existence of
diminishing returns to employment.

3. The effective demand or aggregate demand function (D) =
$(D_1 + D_2)$ measures the actual flow of receipts (in contrast
to the expected flow) accruing to producers in the form of
consumer spending, D_1, and investment spending, D_2. Since
Keynes regarded the level of investment spending as being
determined largely by the state of long term expectations, he
treated the current value of these expenditures as being
fixed and independent of the immediate level of employment.
Consumer spending, though, varies directly with the level of
the community's income, and since the community's income is
a function of the volume of employment, it follows that this
element of spending depends on the level of employment; a
fact Keynes expressed by writing $D_1 = x(N)$. Because of this

dependence, the economy's aggregate demand (D) also varies
with employment as Figure 1 shows.

With Keynes's three aggregate relations now well defined,
we may go on to analyze the way in which his system determines
the short run levels of employment and output of the economy.
According to Keynes ". . . the behaviour of each individual
firm in deciding its daily output will be determined by its
short-term expectations -- expectations as to the cost of
output on various possible scales and expectations as to the
sale-proceeds of this output . . ."[5]

In terms of Figure 1, Keynes is arguing that it is the
intersection (at point A) of the expected proceeds function,
$D = f(N)$, and the aggregate supply function, $Z = \phi(N)$, that
determines the actual level of employment, N_a. However,
because of the way in which this diagram has been drawn, it
can be seen that at N_a, the flow of actual proceeds, $(N_a - B)$
exceeds the flow of expected proceeds, (N_a-A), by the amount
AB. This excess of sales over production will cause entre-
preneurs to revise both their expectations and their rates of
production. In Keynes's words " . . . the process of revision
of short-term expectations is a gradual and continuous one,
carried on largely in the light of realised results; so that
expected and realised results run into and overlap one another
in their influence. For although output and employment are

determined by the producer's short-term expectations and not by past results, the most recent results usually play a predominant part in determining what these expectations are."[6]

The upward revision of expectations will produce a vertical shift in the expected proceeds function and so bring it closer to the aggregate demand or actual spending function of the economy. With this done, the actual level of employment, N_a, will increase and so move toward its equilibrium value of N_e. This continuing process of revising expectations and adjusting the level of employment in the light of realized results will eventually bring the economy into a position of full short run equilibrium. A position where $(D_1 + D_2) = \phi(N)$; where aggregate demand, expected proceeds, and aggregate supply equal one another. In this state of equilibrium, all three aggregate functions of Figure 1 would have E as their common point of intersection.

We end this brief note by pointing out that among other things, Chapters 3 and 5 of the General Theory teach us, contrary to many of the popularized account of this book, that expectations and supply, as well as demand, play important roles in Keynes's short run theory of employment.

Footnotes

1. J. M. Keynes, <u>The General Theory of Employment,</u> <u>Interest and Money</u> (London: Macmillan and Co., Ltd., 1949), pp. 24-25.

2. Keynes, pp. 28-29.

3. The elasticity of output with respect to employment is defined to be $\left[(\Delta Q/Q)/ (\Delta N/N) \right] = \left[(\Delta Q/ \Delta N)/ (Q/N) \right] =$ (M/A).

4. Let (M/A) be equal to a constant λ. Since both M and A are positive, λ too must be positive. But because M is less than A, λ must be less than unity. Hence the elasticity of output with respect to employment is a paramener whose value lies between zero and one.

5. Keynes, Chapter 5, p. 47.

6. Keynes, pp. 50 - 51.