CAPITAL PRODUCTION AND CONSUMER-TAKING—A REJOINDER

If I may, I would like to add one more remark to the discussion,¹ in order to make the object of my first note quite clear.

As originally pointed out by Professor Clark, there exists a certain mechanism connecting capital production and consumer-taking. This fact in itself is undoubtedly a very important one. But in a certain respect it has been misused in the theoretical analysis. The object of my note was to point out this misuse.

In *Economics of Overhead Costs* (p. 390) Clark formulated the description of the mechanism in a proposition which we may here, for convenience of reference, call the first formulation of the acceleration proposition for consumer-taking:

(I) *Acceleration proposition, first formulation:* "The makers of capital equipment are bound, in the nature of the case, to suffer an absolute decline in the demand for their products . . . . whenever ultimate demand slackens its rate of growth."²

In point of principle the proposition (I) is not correct because capital production is made up of two parts, namely, capital production for expansion purposes and capital production for replacement purposes, and proposition (I) only takes account of the first of these parts. In his reply in the *Journal of Political Economy*, December, 1931, Clark therefore modifies the proposition thus:

(II) *Acceleration proposition, second formulation:* "A decline in the rate of increase of consumer-purchase may produce an absolute decline in the demand for long-lived equipment and (in the simplified illustration) must do so unless the changes in the rate of growth of consumer demand are very small."

This formulation is, of course, more correct than the first; but it is not quite satisfactory because it does not express those two fundamental things in regard to which the smallness of the changes in the growth rate of consumer demand must be judged, namely, the depreciation rate and the actual size of the growth rate of consumer-taking. I would prefer the following formulation:

¹ See my note in the *Journal of Political Economy*, October, 1931, and Professor Clark’s reply in the December issue.

² Italics are mine.
(III) Acceleration proposition, third formulation: "A decline in the rate of increase of Consumer-Taking will call forth an absolute decline in the demand for capital goods when and only when the percentage with which the growth rate of Consumer-Taking diminishes per year is larger than the percentage with which the capital goods are worn out per year."

This proposition is what is expressed in formula (5) in my first note. (III) is the only precise and correct form of the acceleration proposition; but we may, of course, qualify (I) by a suitable ceteris paribus clause so as to make also (I) correct in a certain restricted sense. We may, for instance, say that (I) holds good if capital production for replacement purposes is constant. This, it seems, is the essence of Clark's argument in his reply. Thus interpreted, proposition (I) will be of some interest as a means of analyzing the consequences of a sudden and violent drop in consumer-taking. More precisely stated, proposition (I), formulated with this qualification, tells us that any change in consumer-taking which is such that the effect of this change becomes dominating over the effect of the change in replacement production, will call forth an absolute decline in the total capital production.

When the proposition is qualified in this way, it becomes correct, but then, of course, less striking and less far-reaching than it would have been if it had been true in its unqualified form (I). In particular, when the proposition is correctly stated, it becomes clear that it does not explain the turning-point of a regular business cycle. Indeed, if consumer-taking moves cyclically, then (as I showed in my first note) there will be a little interval of time after the point of fastest increase in consumer-taking where total capital production continues to increase, although the rate of increase of consumer-taking has slowed down. This little interval of time around the turning-point in capital production is the critical interval in the business cycle. It is here that the enigma of the business cycle lies. And in this critical interval capital production for expansion purposes is not the dominating element in total capital production. There we have just an interval where the percentage change in the growth rate of consumer-taking is very small. The whole problem of the business cycle turning-point just lies in explaining why there comes a moment of time when capital production for expansion ceases to be the secondary, and again becomes the dominating, element. In other words, the critical interval around the turning-point in capital production is just an interval where Clark's argu-
ment about the correctness of (I), on account of the dominating influence of capital production for expansion purposes, \textit{does not} apply.

The turning-point can, indeed, not be proved by any of the foregoing propositions when they are stated correctly. This turning-point can only be proved by taking account of some additional fact which explains why the slackening of consumer-taking takes place in such a particular \textit{manner} as to call forth the decline in capital production. The acceleration proposition only furnishes one condition; but actually the problem contains two variables, namely, the consumer-taking and total capital production (the variables \( z \) and \( w \) in formula \([5]\) in my first note). However, Professor Clark, Professor Mitchell, and Professor Hansen have actually used the acceleration proposition as a means of proving the turning-point in the business cycle. To point out this misuse was the main object of my note. And I venture to hope that there has been some use in doing so. Thus the essence of the matter discussed is, not the fact that a certain statement needs a quantitative correction, but the fact that one cannot determine two unknowns from a single equation.

I would much regret if this discussion should be made an issue between "mathematical" and "literary" economists. The problems of economics are so large and diversified that there is certainly need for contributions from various types of workers. Professor Clark's remark about the legitimacy of sound formulations adapted to the thinking of the layman in mathematics is so obviously correct that it cannot be discussed.

In my first paper a correction should be made in formula (8). The denominator should read \( 4\pi^2 \) instead of \( 2\pi^2 \), and in formula (9) the lower limit should be \( 0 \) instead of \( 1 \). I also want to apologize for the slip in the footnote on page 646, where I have quoted Bickerdike's article instead of Clark's.

\textbf{Oslo, Norway}