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SCHUMPETER'S CONTRIBUTION TO BUSINESS CYCLE THEORY

Alvin H. Hansen

MACRO-ECONOMICS began with monetary and business-cycle theory. Schumpeter was one of five Continental economists whose work on business cycles laid the foundation for modern macro-economics, and it is worth while to emphasize the fact that this important foundational work in the currently most popular branch of economics was done around the first decade of this century, to be specific in the years 1898 to 1912.

Macro-economics — the branch of economic analysis which deals with the general level of output and income in the economic system as a whole — is often associated nowadays with Keynesian economics. It is true that the *General Theory* contributed to, and opened up new areas for investigation and research in, macro-economic analysis. But there is even now in Anglo-American circles a widespread under-estimation of the Continental contribution to macro-economics.

English speaking economists were, until relatively recently, generally unaware or blind to this significant development in economic thinking. The first English translation of Cassel's *Theory of Social Economy* in 1924 began to break the ice; and Keynes' *Treatise on Money* (1930) may be regarded as a belated, and, in a measure, confused, effort to catch up on Continental thinking. These publications and the increasing emphasis on the investment approach aroused an interest in the basic literature and led to the English translation of Schumpeter's *The Theory of Economic Development* in 1934, and Wicksell's *Interest and Prices* and *Lectures on Political Economy* (Vol. II, *Money*) in 1935 and 1936. Most of the rest of the important Continental literature still remains untranslated into English.

Schumpeter was one of the most brilliant and original of the five Continental writers who originated nearly all of the really basic ideas in modern business-cycle theory (the most sig-

nificant omission being the multiplier and the consumption function). To be more specific, these basic ideas were first clearly pointed up in the following publications: Wicksell's *Geldzins und Güterpreise* (1898), Tugan-Baranowsky's *Studien für Geschichte der Handelskrisen in England* (1901), Spiethoff's "Vorbemerkungen zu einer Theorie der Überproduktion," *Jahrbuch für Gesetzgebung, Verwaltung und Volkswirtschaft* (1902), Aftalion's "Essai d'une Theorie des crises générales et périodiques," *Revue d'économie politique* (1909), and Schumpeter's "Über das Wesen der Wirtschaftskrisen," *Zeitschrift für Volkswirtschaft* (1910) and *Theorie der wirtschaftlichen Entwicklung* (1912).¹

The leading basic conceptions which were developed in this literature were: (1) the essential characteristic of the cycle movement is a fluctuation in the rate of output of fixed capital (Tugan-Baranowsky); (2) investment outruns saving in the boom phase of the cycle (the difference being financed by tapping idle balances and creating new bank credit), and in the depression phase saving outruns investment (Tugan-Baranowsky, Wicksell); (3) investment opportunities rise when the rate of return on real capital exceeds the money rate of interest (Wicksell); (4) favorable investment opportunities are created in a dynamic society experiencing rapid technical progress, rapid growth in terms of resources and population, and rapid expansion into new territories (Spiethoff); (5) a society using large quantities of fixed capital experiences a marked lag between the decision to expand output and the realization of the desired end (Aftalion); (6) a society using a large amount of durable capital goods will discover that mild oscillations in final demand cause large fluctuations in the

¹ I cite here only the significant publications on the subject. In each case, those here cited were followed by other, often more expanded, publications.

derived demand for fixed capital (Aftalion); (7) the economic system is like a rocking horse, capable of performing cyclical adjustment movements in response to external shocks (Wicksell); (8) a dynamic society is constantly being drawn away from neighborhoods of equilibrium by reason of the pioneering activities of daring innovators whose lightning successes entice a swarm of imitators into a wild outpouring of new investment activity (Schumpeter).

Here are all the elements (the multiplier alone is missing) of a modern cycle theory including the materials for the construction of econometric models, such as the cob-web theorem and the quarter-cycle accelerator-induced lag.

Here are rich materials for the business-cycle theory mill: external shocks and internal relationships between the variables that constitute the structure of the economy. Within this framework, it is innovational activity (Schumpeter) which accounts for the "wave movement" in economic life.

Schumpeter's theory of innovation would have no meaning apart from the "fixed-capital investment framework" created by the Continental business-cycle school. Schumpeter's "new production function," the child of innovation, would have no meaning in the *Kapitallose Wirtschaftstheorie* — the "economic theory of acapitalistic production" — particularly the theory of English economics "of the fifty years after 1870."² But it was a vital part of the dynamic theory which was evolving on the Continent in the first decade of this century.

Schumpeter's innovations supply, indeed, the heart-throb that pumps intermittent flows of investment into the economic system, a system with a structure of internal relationships between economic variables (time lags or time rates of change) capable of responding in a cyclical manner to such intermittent disturbances.

With respect to Schumpeter's cycle theory I shall direct attention to four matters, all of interest and some not altogether free from obscurity; and in my brief discussion I shall not pretend to reach definitive conclusions. They

² See Lionel Robbins' Introduction to Wicksell's *Lectures*, p. xiv.

are: (1) Should his theory be classified as exogenous or endogenous? (2) Schumpeter's explanation of the upper turning point; (3) the three-cycle schema; and (4) the relation of his two-volume *Business Cycles* of 1938 to his *Theory of Economic Development* of 1912.

A perennial and inexhaustible subject for discussion (which Schumpeter himself did not clearly resolve in his vast two-volume work on business cycles) is the question whether Schumpeter's cycle theory is an exogenous or an endogenous one. It is exogenous in the respect that it places primary emphasis upon changes in the data. Yet it is also an endogenous theory in the respect that it runs in terms of an internal, self-perpetuating process — a process inherent in the inner nature of a dynamic economy whose impelling force — innovation — cycle after cycle renews the wave-like movement. The business cycle is regarded as the ebb and flow of innovation, together with the repercussions flowing therefrom. It is an endogenous process determined by the inner nature of a dynamic economy; but it is exogenous in the sense that innovation *is* a change in the basic data.³

Exogenous theories place primary emphasis upon changes in the data; endogenous theories, upon the lagged reactions of the economic structure (with a system of internal relationships) to changes in the data. It is sometimes said that there is a tendency in business-cycle literature in general to stress the role of exogenous factors (changes in the data) as the cause or causes of expansion; and to stress the role of endogenous factors (lagged response springing from a system of constant relationships) at the upper turning point. This statement seems to fit Schumpeter's analysis reasonably well.

Expansion is brought about, in Schumpeter's view, by innovational activity. An innovation is defined, broadly speaking, as a fundamental change in the data. Innovation is an historic and irreversible change in the way of doing things. It is not a matter of varying the *quantities* of the factors; it is a change in the production function. "We will simply define innovation as the setting up of a new production function."⁴ This means not only new tech-

³ Cf. Tinbergen in this issue. — Ed.

⁴ *Business Cycles*, pp. 87–88.

niques, but also new products, new forms of organization, new markets. It involves not only new ways of doing things but is generally associated with new firms and new men. All this points up the exogenous elements in Schumpeter's theory.

Innovation wells up in a great tidal wave, and then recedes. The business cycle, as Schumpeter saw it, is nothing more or less than the ebb and flow of innovation, together with the repercussions flowing therefrom. An economy which experiences innovations necessarily displays wave-like movements. Innovation involves capital investment which "appears *en masse* at intervals." Innovational activity tends to come in "clusters," in "bunches," because of the herd-like action of followers in the wake of successful innovation. Whenever a few successful innovators appear, a host of others follow. The appearance of a few innovating entrepreneurs facilitates the appearance of others, and these, the appearance of more in ever-increasing numbers. This is the basis of the "wave-like movement" of economic life. The expansion proceeds by "rushes" because of the herd-like sweep into new openings. Innovation is thus discontinuous, like the throw of dice. The new contribution appears "discontinuously in groups or swarms." The central drawing force, the primary cause of cyclical movements, is the appearance of an innovation which sets going the herd-like movement of entrepreneurs.

But there is also the endogenous process of adaptation to this driving force. Under the impulse of innovational activity, the economic system draws away from the neighborhood of equilibrium. But the farther it moves away from equilibrium the stronger is the fall back to equilibrium. In the downward readjustment the economy is likely to "overshoot." Again the economy is pulled back toward equilibrium. After this process of adaptation and adjustment, this recovered neighborhood of equilibrium offers a favorable climate for a renewed surge of innovation. Thus in a very fundamental sense, Schumpeter's theory runs in terms of an endogenous, self-perpetuating process — a process inherent in the inner nature of a dynamic economy. Frisch, by combining Schumpeter's and Aftalion's systems, has given

us an interesting example of a self-perpetuating endogenous cycle movement.⁵

With respect to the termination of the boom, Schumpeter did not accept the view of Spiethoff (also that of Robertson and others) that it is a question of investment saturation. Rather he followed Juglar's lead — the "only cause of the depression is prosperity." This statement he interpreted to mean that depression is nothing more than the economic system's reaction to the distortions of the boom; it is the "adaptation to the situation into which the boom brings the system." Innovations inject disturbances into the system. These disturbances cannot be currently and smoothly absorbed. They are "big" and they disrupt the existing system and enforce a distinct and often painful process of adaptation. The boom development is "lopsided, discontinuous, disharmonious." The depression is a process of adaptation to the changed conditions ushered in by the boom. The economic nature of the depression lies in the diffusion of the achievements of the boom over the whole economic system through the process of the struggle for equilibrium.⁶

He liked Fisher's concept, "rate of return over cost,"⁷ and in his biographical article on Fisher⁸ specially refers to Keynes' acceptance of Fisher's formulation. But he did not build his own theory, of either the expansion or the upper turning point, on the investment demand function as formulated by Wicksell and later by Fisher. Moreover, he paid scant attention to the acceleration principle. Thus, while his explanation of the upper turning point could in a sense be regarded as an endogenous theory, it did not rest on any of the econometric models derived from Aftalion's acceleration principle. In his classes, however, he often commented on Samuelson's article on the interaction of the multiplier and the accelerator, and he also took cognizance of Metzler's econometric inventory models. But just how he would have incorporated these, if at all,

⁵ *Economic Essays in Honour of Gustav Cassel*, pp. 171-207.

⁶ *Theory of Economic Development*, p. 251.

⁷ *Business Cycles*, Vol. I, p. 129.

⁸ *Econometrica*, July 1948, p. 226.

into his system, had he revised his *Business Cycles*, is not altogether clear.

Schumpeter's three-cycle schema has been and remains a matter of controversy. That we have had long-run, secular movements of prices no one doubts, but it is not quite clear how these are to be interpreted in relation to the "Juglar" or major cycles. Schumpeter regards these long periods of buoyancy and relative stagnation as part of a genuine wave-like movement, with the ground-swell of far-reaching innovations at work in the "upswing," and equally far-reaching readjustments being made in the long downswing periods. Whether these secular movements are really long-cycles, whose phases stand in an integral relation to each other, is at least debatable and the weight of competent opinion appears to be against Schumpeter. That the long periods of buoyancy, with rising secular price trends, are periods of fundamental innovations — the railroad age, the automotive and electrical age — seems to me highly persuasive. There is a discontinuity in fundamental innovational activity — a movement into quite new frontiers of technology, the achievement of a fundamentally higher plateau of production methods, a new level of technique, as for example the railroad. The emphasis placed by Schumpeter upon the rate of revolutionary changes in technology is of great importance to an understanding of the modern

economic process. It has been stressed by others, including Wicksell and Spiethoff; but Schumpeter, more than the others, has developed this concept into an organic system of analysis, perhaps too rigid a mold, but nonetheless highly illuminating and helpful in the difficult task of understanding the dynamic processes of the modern economy.

Finally, a brief word about the relation of Schumpeter's two leading books on business cycles — *Theorie der wirtschaftlichen Entwicklung* (1912) and *Business Cycles* (1939). The first book, comparatively small, presents a central idea in a bold, imaginative, dashing, colorful, and eloquent style; the second, a massive two-volume work, rich in historical learning, takes cognizance of a vast analytical literature but only as a side issue in the process of unfolding the author's own argument. There is in a way a parallel in the case of Malthus. The *Essay on Population*, a brief but brilliant work, was followed some years later by a two-volume work full of vast accumulations of empirical research. But it was the sweeping hypothesis painted with bold strokes in rich colors which carried the day. The subsequent writing was more painstaking and in a way more thorough, but the literary quality and power of the *Essay* remained unsurpassed. Much the same could be said in high praise of Schumpeter's early work — *The Theory of Economic Development*.