



**WILEY-  
BLACKWELL**



---

Economic Methodology in the Face of Uncertainty: The Modelling Methods of Keynes and the Post-Keynesians

Author(s): J. A. Kregel

Reviewed work(s):

Source: *The Economic Journal*, Vol. 86, No. 342 (Jun., 1976), pp. 209-225

Published by: [Wiley-Blackwell](#) for the [Royal Economic Society](#)

Stable URL: <http://www.jstor.org/stable/2230743>

Accessed: 11/09/2012 17:24

---

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Wiley-Blackwell and Royal Economic Society are collaborating with JSTOR to digitize, preserve and extend access to *The Economic Journal*.

<http://www.jstor.org>

# THE ECONOMIC JOURNAL

JUNE 1976

---

*The Economic Journal*, 86 (June 1976), 209-225

Printed in Great Britain

## ECONOMIC METHODOLOGY IN THE FACE OF UNCERTAINTY: THE MODELLING METHODS OF KEYNES AND THE POST-KEYNESIANS

Keynes's major contribution to economic theory is often characterised as an emphasis on the possible difference between *ex-ante* decisions and *ex-post* results or on the recognition that, in an uncertain world, expectations may be disappointed. On such an appreciation of Keynes's contribution to economic theory numerous writers have, reasonably, questioned the frequently avowed Keynesian parentage of what has come to be called post-Keynesian (or Cambridge) economic theory. Professor Lachmann<sup>1</sup> maintains that the practitioners of the "Cambridge School" are "ill-equipped to deal with autonomous changes in demand or in the range of divergence of expectations, to which Keynes attributed importance and drew our attention, and on which the pattern of specifying investment decisions depends", and that the approach thus lacks essential factors associated with Keynes's work. Professor Lachmann further maintains that this deficiency is especially visible in the complete reliance of the Cambridge school on static macro equilibrium; a concept that he believes to be non-existent in, and certainly inconsistent with, any economic theory claiming Keynes as parent.

Professor Blaug has recently echoed this particular theme,<sup>2</sup> asserting that post-Keynesian theory has "been no more successful than the orthodox theory in throwing off the strait jacket of equilibrium analysis in conditions of perfect certainty and full information".<sup>3</sup>

Such arguments lead to two conclusions. First, that the post-Keynesian generalisation of the *General Theory* is a sham and neglects the most important aspects of Keynes's work, especially through reliance on steady-state equilibrium models; and secondly, that the use of such an equilibrium approach makes the theory a poor substitute for, if not identical with, the orthodox theory of static equilibrium (cf. Blaug, *op. cit.*, pp. 83-6).

It is the purpose of what follows to show the dubious nature of such conclusions and to demonstrate both how post-Keynesian theory can be seen as a legitimate extension of the basic methodology employed by Keynes in the *General Theory* and that the nature and use of the concept of equilibrium in

<sup>1</sup> *Macro-economic Thinking and the Market Economy*, Hobart Paper No. 56 (London, Institute of Economic Affairs, 1973), p. 51.

<sup>2</sup> *The Cambridge Revolution*, Hobart Paperback No. 6 (London, IEA, 1974), p. 82.

<sup>3</sup> Professor Brown takes the argument one step further intimating that post-Keynesian theory stops at "Comparative dynamics which is little more than comparative statics in a steady growth world" and thus does not even allow "truly dynamic considerations" (*Journal of Economic Literature*, vol. XIII, June 1975, p. 487).

post-Keynesian theory is unmistakably different from the orthodox nature and use of the concept. The implicit conclusion is, of course, that most critics have seriously misinterpreted Keynes's methodological position in the *General Theory*.

#### THE PLACE OF EXPECTATIONS

In Keynes's surviving written work there is no indication that he considered expectations as *the* distinguishing feature of his approach. Pride of place was instead reserved for the principle of "effective demand or, more precisely, of the demand schedule for output as a whole". Indeed, expectations and disappointment are consciously made to take second place in relation to the exposition of this principle. "To me, the most extraordinary thing regarded historically, is the disappearance of the theory of demand and supply for output as a whole, i.e. the theory of employment, *after* it had been for a quarter of century the most discussed thing in economics. One of the most important transitions for me, after my *Treatise on Money* had been published, was suddenly realising this."<sup>1</sup> It was this realisation that shifted his work from revision and extension of the theory of money to the development of an original and *general* theory of prices, employment and output as a whole in which there could be no distinction between "monetary" and "real" relations. Keynes moved on to deal with the "monetary production (or entrepreneur) economy", where "money plays a part of its own and affects motives and decisions and is, in short, one of the operative factors in the situation, so that the course of events cannot be predicted, either in the long period or in the short, without a knowledge of the behaviour of money between the first state and the last" (*C.W.* XIII, pp. 408-9) in distinction to a neutral or "real-exchange economy" which recognises money but uses it merely as a neutral link between transactions in real things and real assets and does not allow it to enter into motives or decisions (*ibid.* p. 408). It was in a monetary production economy that effective demand took on importance because of the existence of uncertainty, disappointment and expectations. Thus, underlying the shift of emphasis were two important changes.

(1) *A Shift from Actual to Expected Magnitudes.* In the *Treatise* Keynes felt he had given "insufficient attention to the distinction between actual and anticipated demand" (*C.W.* XIII, p. 434). "I did not in that book distinguish clearly between expected and realised results" (*ibid.* p. 437). Thus the *General Theory* emphasises that the correct magnitude is the expected or anticipated value of a variable, e.g. the expected proceeds of a given volume of employment. Even in an early draft Keynes says explicitly that the dependent variables in his functional relations are "to be interpreted in this context in terms of expectations, i.e. as the expected rates of consumption and investment" (*C.W.* XIII, pp. 441-42).

(2) *A Distinction between Particular Individual (short-period) Expectations and the Effect of the State of "General" (Long-period) Expectations.* In an early draft of the

<sup>1</sup> *The Collected Writings of John Maynard Keynes*, vol. XIV (London: Macmillan, 1973), p. 85. Further references to this edition will be indicated as *C.W.* followed by the volume number, except for the *General Theory* which will be indicated as *G.T.*

*General Theory* the consumption and investment functions contained an explicit variable,  $E$ , to represent the state of long-term expectations which were independent of the system, such that a stochastic change in  $E$  could shift the entire functional relation. Only with  $E$  assumed given and constant at some particular level could the functions be assumed constant.

It was the express introduction of these two points that underlined the fact that the world that was under analysis was one in which, "the organisations change and develop, information arrives and decisions are taken sequentially. No present moment is like any past moment and organisations and units adapt and re-adapt."<sup>1</sup> But such a picture with unpredictable shifting functions and unforeseen change was ill suited to the exposition of what Keynes felt to be his most fundamental contribution, the principle of effective demand. The problem that had to be faced was "how [the real world] can usefully be tamed to serve the analyst and the practitioner" (*ibid.*), to serve the simple exposition of effective demand in determining the level of employment.

There was one obvious way to resolve the dilemma. Keynes could have assumed away ill-informed expectations and uncertainty; as Blaug says, assume "conditions of perfect certainty and full information". Having worked out the analysis the assumptions could then have been relaxed one by one until reality was approximated: but Keynes realised that this could not easily be done. Moreover, such a course would have been patently inconsistent, for this is the solution that he had accused the proponents of "neutral economy" of adopting: and which was then, and is now, the basis of the current orthodoxy, and which effectively obliterated the problems that Keynes was trying to bring into the scope of analysis. Indeed, such a method would have implied rejecting those very features which he considered crucial in a monetary production economy, and without which there would be no need for a theory of effective demand, since under such neutral conditions all money income would be fully spent on current output.<sup>2</sup>

Keynes thus had to find another way to "tame" the real world. The method that he adopted represents one of the most essential and most often overlooked differences between post-Keynesian and neoclassical methodology.

#### ASSUMPTIONS ABOUT EXPECTATIONS

Keynes chose to make assumptions, not about the absence of false expectations and uncertainty in the economy under consideration, thus creating an economy with perfect information and certainty, but rather to assume that although expectations and uncertainty are always present, yet different assumptions could be made about the constancy of expectations and their effect on the system. It is not the assumptions made about the economy under analysis that are different, but the assumptions made about expectations in an economy in which these play an integral part.

The simplest solution seemed to be to assume that the general long-period

<sup>1</sup> F. H. Hahn, "The Winter of Our Discontent", *Economica*, vol. XL (August 1973), p. 326.

<sup>2</sup> R. B. Bryce, Notes of Keynes's Lectures, 23 October 1933 (mimeo, Cambridge).

state of expectations was given and constant. This assumption of constant long-period expectations allowed the specification of simple, continuous functional relationships which constantly shifting long-period expectations would have made impossible. Keynes could thus "lock-up" this effect of general expectations and uncertainty without assuming that they did not exist. He could then proceed to analyse the results of alternative differing given and constant states of expectations, rather than first analysing an economy assuming perfect information and certainty, and then trying to adapt this analysis to study a "realistic" model of the real world.

Keynes made this assumption of constant long-period expectations. "Having, however, made clear the part played by *expectations* in the economic nexus and the reaction of realised results on future expectations, it will then be safe for us in what follows often to discard express reference to expectations. It is important to make the logical point clear and to define the terminology precisely so that it will apply without ambiguity in all cases" (*C.W.* xiv, p. 397). The assumption thus meant remembering at the back of our minds that "we shall not in any way be precluded from regarding the propensity itself as subject to change" (*C.W.* xiii, p. 440) due to a change in general expectations when faced with analysing the real world. The assumption of constant expectations is obviously something quite different from the assumptions of perfect foresight and certainty.

At the same time, such an assumption leaves open the possibility that particular individual expectations are free to be disappointed, but that such possible disappointment will not react on the general state of expectations which is, under this assumption, independent of the disappointment of particular expectations.

Thus, while considering the importance of expectations and the difference between expected and actual results in influencing expectations, Keynes felt that these parts of the economic nexus could be held in abeyance in order to give full scope to the demonstration of the role played by effective demand in the determination of employment, thus allowing a clear demonstration that the system could produce an equilibrium position with less than full employment. The relative importance of long- and short-period expectations are thus given varying weight in the *General Theory* and at certain points in the book Keynes does not make it clear what he is assuming about each. The most usual tactic was to hold the state of long-term expectations (the state of the news) constant when talking of functional relationships (hoping, with "the introduction of user cost and the marginal efficiency of capital" to give a role to expectation "whilst reducing to a minimum the necessary degree of adaptation" of the orthodox theory (*G.T.* p. 146), but occasionally introducing the effects of disappointment of particular expectations into the discussion of the position of equilibrium of the stable functions (i.e. assuming independence between disappointment and shifts in long-term expectations)). This rather confusing mix, in which particular expectations could be disappointed, but could not affect long-term expectations which by assumption were held constant, Keynes found to be unsatisfactory, since readers of his book still

seemed to credit to expectations what they should have credited to the theory of effective demand. This led Keynes to comment in his 1937 lectures that, "if I were writing the book again I should begin by setting forth my theory on the assumption that short-period expectations were always fulfilled; and then have a subsequent chapter showing what differences it makes when short-period expectations are disappointed. For other economists, I find, lay the whole emphasis, and find the whole explanation in the *differences* between effective demand and income; and they are so convinced that this is the right course that they do not notice that in my treatment this is *not* so." Such an assumption, Keynes felt, would pin-point the essential "operative factor" as "effective demand" for "the theory of effective demand is substantially the same if we assume that short-period expectations are always fulfilled" (*C.W.* xiv, p. 181). Thus, "The main point is to distinguish the forces determining the position of equilibrium [point of effective demand] from the technique of trial and error by means of which the entrepreneur discovers where the position is" (i.e. the revision of expectations in the face of realised results) (*ibid.* p. 182). Such a division would allow greater emphasis on the basic point that "the economic system may find itself in stable equilibrium with  $N$  at a level below full employment, namely at the level given by the intersection of the aggregate demand function on the aggregate supply function" (*G.T.* p. 30). Keynes's theory could thus be stated without reference to the Swedish approach for "*ex ante* decisions in their influence on effective demand relate solely to *entrepreneurs'* decisions", the disappointment of expectations influences the next *ex ante* decisions, but even on the assumption, "of the identity of *ex post* and *ex ante* my theory remains... I should have distinguished more sharply between a theory based on *ex ante* effective demand, however arrived at, and a psychological chapter indicating *how* the business world reaches its *ex ante* decisions" (*C.W.* xiv, pp. 182-3).

Thus in the *General Theory* Keynes presents a world in which long-period expectations may shift quite independently of strictly economic results; where short-period expectations about particular results may be disappointed (and may affect long-period expectations). His "tamed" model assumes that long-period expectations are constant and disappointed short-period expectations do not reflect on long-period expectations. In the lecture notes he suggests a third possibility of assuming that long-period expectations are constant and that short-period expectations are *always* realised in order to put expectations into the back seat, giving all the emphasis to effective demand. It was this purely static model, divorced from disappointment and shifts in expectations, that Keynes finally preferred to use for demonstrating that unemployment was not a short-run disequilibrium phenomenon, that it was not the result of the booms and slumps that might result from inexact entrepreneurial expectations,<sup>1</sup> and that in theory the system could settle in equilibrium at

<sup>1</sup> The traditional explanation of unemployment linked the mistaken expectations of entrepreneurs (too optimistic in the boom and too pessimistic in the slump) to fluctuations in output and employment. See, for example, F. Lavington, *The Trade Cycle* (London: P. S. King, 1922), who gives the view that "these cyclical changes of business activity are probably the most important single cause of unemployment" (p. 16) and that these cyclical changes in "the current activity of business depends

almost any level of employment between zero and full employment. The emphasis that is commonly placed on the possible divergence of *ex-ante* and *ex-post* values and on the possible disappointment of expectations as *the* crucial factors in Keynes contribution seems both misplaced and historically inaccurate.

#### KEYNES'S THREE MODELS

The foregoing account suggests that Keynes may have had in mind three distinct classes of models of the economy: two which he used explicitly in the *General Theory*, and the third which he suggested in the 1937 Lectures. These three models differ, not in the existence or absence of expectations, disappointment and uncertainty, but in terms of the various assumptions made about the effect of these phenomena on the system. Let us recall the expectational factors that Keynes considered important:

(a) The state of general or long-period expectations is independent of the system and may shift autonomously in reaction to economic or non-economic factors and will be a major determinant of the marginal efficiency of capital, liquidity preference and the propensity to consume.

(b) Individual, particular short-period expectations may be disappointed.

(c) Disappointment of expectations in (b) may affect (a) and vice versa.

The three models can be distinguished by the different assumptions made about these three properties of a monetary production system.

#### 1. *The Model of Static Equilibrium – 1937*

The state of general expectations is given and constant at a particular level. They do not respond to individual realised short-period expectations which are, by assumption, always realised. Thus the aggregate demand and supply functions once drawn up for a given state of general expectations are fixed and cannot shift; the system moves instantly to the point of effective demand. This, Keynes felt, was the most suitable way to show that the point of effective demand could occur at less than full employment for a given state of expectation, and this was *irrespective* of the process by which the system reacted to disappointed expectations. The theory of effective demand could thus be set out without the concepts of *ex-ante* and *ex-post*, and with expectations always realised; but without having to assume that there was perfect certainty or that the whole future was perfectly known.<sup>1</sup>

---

on the estimates made by business men of future market conditions, and that these estimates in their turn are affected materially by the general state of confidence in the business outlook" (p. 29) while "the principal influence lies in the tendency of confidence to rise or fall cumulatively". In his Preface Lavington indicates this to be a summary of views held by Marshall, Pigou, Robertson, W. C. Mitchell and Aftalion. Keynes could thus hardly claim anything novel in his emphasis on expectations (the passage quoted from Lavington covers the two points listed on page 210 above!), nor is it surprising that many of Keynes's contemporaries, thus mistaking his message, could find little new in his explanation of unemployment except a lot of new names for old concepts.

<sup>1</sup> This seems to be similar to what Professor Hahn has called a "notional system" where "Current demand for inputs is thus a function of expected future sales", and "routine behaviour" (constancy of the form of the expectation function) is possible. It should be noted, however, that the form of the problem differs. Keynes derives those positions of equilibrium that would result from various assumptions about expectations while Professor Hahn enquires into what assumptions about expectations

## 2. *The Model of Stationary Equilibrium*

Here the state of general expectations is still held constant so that functional relations can be specified, since present disappointment, which can now exist, is assumed to have no effect on long-period expectations. It is this model that Keynes relies upon, for the first 18 chapters of the *General Theory*, as the basic expository device for the demonstration of the principle of effective demand as the main determinant of the level of employment. The method of operation of this model was to compare different given and constant long-period levels of expectations (cf. *G.T.* p. 48, and note 1) while at the same time allowing for the fact that short-period expectations were subject to disappointment. Disappointed entrepreneurs could then revise their expectations of the point of effective demand and their employment decisions until, by trial and error, they hit on the point of effective demand, i.e. they could shift position on the aggregate supply curve without the curve itself actually shifting.<sup>1</sup>

It is obvious, however, that this was the only solution if Keynes was to emphasise uncertainty and expectations as a prerequisite for the theory of effective demand and allow shifts along functions without bringing shifts in the functions themselves. It was the only way both could be kept in the spotlight as mutual co-determinants. Unfortunately, Keynes often changed what he was assuming about expectations to suit a particular purpose and, in general, when making statements about general policy he often slipped into adopting the assumptions of the third model.

## 3. *The Model of Shifting Equilibrium*

This is Keynes's complete dynamic model where current disappointment may affect the state of general expectations and thus the independent expectational functions are free to shift over time; where expectations normally are disappointed. Here failure to hit on the point of effective demand may mean not only that the system has missed the intersection of the aggregate demand and supply curves, but that this will cause the curves themselves to shift, since their underlying determinants (propensity to consume, liquidity preference, marginal efficiency of capital) will be readjusting to disappointment (and this is in addition to any shift which is independent of these factors).

By taking as the objective the real world in which uncertainty is an integral

---

will be compatible with various equilibria, or more generally what sets of individual plans are mutually consistent over time. Keynes is more preoccupied with the analysis of the process by which the economic system makes inconsistent plans consistent. Cf. F. H. Hahn, "Expectations and Equilibrium", *ECONOMIC JOURNAL*, vol. LXII, December 1952, p. 806.

<sup>1</sup> Which obviously implies that factor (c) outlined above does not hold – a state of affairs that led to much confusion and Keynes's eventual rejection of this model in favour of the static model for the exposition of the principle of effective demand. Keynes seems, however, to have thought the assumption reasonably realistic (cf. Appendix, below). Hahn's analysis (*ibid.*) would seem to imply that such inconsistent short-period expectations would "exclude the possibility of equilibrium" (p. 808) unless there was an appropriate adjustment in the form of the expectations function (cf. p. 813). In this context it is interesting to note the assumption employed by Joan Robinson in *The Accumulation of Capital* (London: Macmillan, 1956, p. 67): "when something occurs which causes change, we assume that expectations are immediately adjusted, and that no further change is expected".



part, the different models are made to refer, not to differences in what is to be described, but to what conditions the observers foresee in the real world; for "it is not the economy under observation which is moving in the one case and stationary in the other, but our expectations of the future environment which are shifting in one case and stationary in the other" (*C.W.* xiv, p. 511). This distinction is also noted in the *General Theory* (*G.T.* p. 293) in terms of a "line of division between the theory of stationary equilibrium and the theory of shifting equilibrium – meaning by the latter the theory of a system in which changing views about the future are capable of influencing the present situation".<sup>1</sup> In such a world expectations are not always realised and actual proceeds may not be what had been expected. Entrepreneurs observe their errors through changes in desired inventories, or changes in order books, and responses are made as the general state of expectations interacts with present realisations. The system will be shifting along the aggregate supply and demand curves at the same time as these curves will themselves be shifting their positions as the system reacts to disappointment of the two types of expectations. The extreme complexity of such a situation explains why Keynes was willing to "tame" this system, first making assumptions that allowed the definition of functions that he knew did not exist through their entire range, expressly in order to give force to the theory of effective demand. Here the Swedish concepts of *ex-ante* and *ex-post* were of little use, for the impact of any specific set of expectations could not be accurately calculated in a real world situation since the assumptions of the stationary equilibrium model were insufficient for obtaining a full explanation of the interactions of the economic nexus.

In the shifting equilibrium model entrepreneurs may carry out plans that lead to realised effective demand (with its associated actual rate of growth) which differs from the level of effective demand that would result if plans were realised (as Keynes stressed in a letter to Harrod (*C.W.* xiv, p. 322), "*ex-ante* is what entrepreneurs plan to do, not what they ought to do to assure the equality of *ex-ante* and *ex-post*"). Keynes thus suggested that the growth rate associated with realisation of expectations be called the "warranted" rate of growth (*ibid.*), adding that if the actual rate is different from the warranted rate and expectations are not given, the reaction of economic agents might be to rethink their overall expectations which might lead to further divergence between the actual and warranted rate as the warranted rate itself shifts to what Keynes christened a "temporarily warranted rate" (*ibid.*) (explaining his reluctance to accept Harrod's definition of warranted growth).

On this view entrepreneurs take actions based on expectations regarding an uncertain future. If, by chance, the actions of entrepreneurs are compatible in the aggregate, the economy will be on the warranted or equilibrium path (but this need not imply full employment). If, on the other hand, initial

<sup>1</sup> Thus such a position is neither short- nor long-period equilibrium in Hahn's sense (*ibid.* p. 806), but it is compatible with the statement that "short-run instability does not necessarily imply long-run instability" (*ibid.* p. 818). Here a "new model" is set up for every shift in expectation, and although Keynes believed expectations to be volatile he also believed the system to be "not violently unstable" (*G.T.* p. 249).

plans are disappointed then equilibrium can be obtained, after a period of historical time, *only* if it is assumed that despite entrepreneurial realisation of mistakes, the state of short-period expectations is independent of general expectations, so that entrepreneurs persist in their beliefs until equilibrium is established by trial and error. This was a process which Keynes did not expect to occur naturally in any real economy, but which his stationary model allowed to occur for pedagogical purposes.

If, however, realisation of error alters the state of expectations and shifts the independent behavioural functions, Keynes's model of shifting equilibrium will describe an actual path of an economy over time chasing an ever changing equilibrium – it need never catch it.

We can characterise the three models in terms of the three expectational factors given above.

	(a) Long-period expectations	(b) Short-period expectations	(c) Interaction of long- and short- period expectations
Static model	Constant at a given level	Realised	Independent
Stationary model	Constant at a given level	May be disappointed	Independent
Shifting model	Shifting over time	Disappointed	Interdependent

This approach to modelling is, however, conceptually distinct from the manner of use of equilibrium to tame the system adopted in most other approaches from the monetarist to general equilibrium. It is, however, consistent with the methodology used by the post-Keynesian writers who employ models of tranquillity, which are identical with the model of stationary equilibrium or with models of warranted growth which require a mix of the static and stationary models. Whereas Joan Robinson prefers to put the example in terms of two economies with different rates of investment, Keynes would have used the stationary model with two different levels of expectations to trace out the long-period path compatible with each set of expectations (*G. T.* p. 48). The underlying methodology is exactly the same.<sup>1</sup> The differences that do exist lie in the problems chosen for analysis.

#### THE FORMATION OF A MODEL: CHOOSING DEPENDENT, GIVEN AND INDEPENDENT VARIABLES

Although Keynes believed his model to be general<sup>2</sup> he used it to analyse a specific problem, the determination of the level of money income and employment. The choice of the problem to be analysed to a large extent

<sup>1</sup> This method is simply the third of Marshall's "three familiar scientific methods", i.e. "to find two cases which resemble one another in every respect except that one cause is present in one of them but not in the other. Then by holding the cases up to the light, as it were, against one another the effect of that cause is made to stand out." Marshall's Inaugural lecture: "The Present Position of Economics" reprinted in A. C. Pigou (ed.), *Memorials of Alfred Marshall* (London: F. Cass, 1956), p. 168.

<sup>2</sup> Keynes's model is not general in the same sense as the model of general equilibrium which claims to encompass all basic economic interrelations at the same time. Keynes's claim to generality comes rather from the explanation of the one magnitude that the orthodox theory took as given; the level of output and employment which in Keynes's theory can be anything from zero to full employment; whereas he accused the orthodox theory of only operating under the *assumption* of full employment

determines what variables are to be classed as independent, given and dependent in Keynes's methodology.

"The division of the determinants of the economic system into the two groups of given factors and independent variables is, of course, quite arbitrary from any absolute standpoint. The division must be made entirely on the basis of experience, so as to correspond on the one hand to the factors in which the changes seem to be slow or so little relevant as to have only a small and comparatively negligible short-term influence on our *quaesitum*; and on the other hand to those factors in which the changes are found in practice to exercise a dominant influence on our *quaesitum*. Our present object is to discover what determines at any time the national income of a given economic system and (which is almost the same thing) the amount of its employment; which means in a study so complex as economics, in which we cannot hope to make completely accurate generalisations, the factors whose changes *mainly* determine our *quaesitum*. Our final task might be to select those variables which can be deliberately controlled or managed by central authority in the kind of system in which we actually live" (*G.T.* p. 247, cf. *C.W.* XIII, pp. 481-3). Keynes's particular *quaesitum* was the determination of the volume of employment and money national income. In this context he believed that the following factors could be considered as given:

- (1) The existing skill and quantity of labour.
- (2) The existing quality and quantity of productive equipment.
- (3) The existing techniques of production.
- (4) The degree of competition.<sup>1</sup>
- (5) The tastes and habits of consumers.
- (6) The disutility of different intensities of labour and activities of supervision and organisation.

These factors are considered as given but not necessarily constant, by which Keynes meant that the effect and consequences of changes in them were not under consideration. The given factors then "influence our independent variables, but do not completely determine them" (*G.T.* p. 246). Keynes's

---

(*C.W.* XIV, p. 106). His position is indeed closer to Marshall's partial or one at a time method, although his system is interdependent in a sense that Marshall's is not. This also implies that Keynes's view of the "generality" of his theory is incompatible with the "Generalized General Theory" that Hicks suggests when, for reasons of "Mathematical elegance", he turns the theory into a simultaneous equation system in three variables; income, the rate of interest, and the value of investment (in "Mr Keynes and the Classics", pp. 134-5, reprinted in *Critical Essays in Monetary Theory* (Oxford University Press, 1967). Such "Generalisation" wipes out the theory of effective demand "at a stroke" (cf. L. L. Pasinetti, "The Economics of Effective Demand", p. 47, in *Growth and Income Distribution* (Cambridge University Press, 1974)) and eliminates causality.

<sup>1</sup> The discussion about what kind of market Keynes was assuming is thus nugatory - any would do, for Keynes felt it would make no difference to the exposition of effective demand. Many economists find it easier to understand Keynes's model by assuming imperfect competition or monopoly. Kalecki provided an equivalent to Keynes's model working from just this standpoint, but it is not crucial to Keynes's own position as long as the degree of competition, whatever it is, can be taken as given (cf., however, "Relative Movements of Real Wages and Output", *ECONOMIC JOURNAL*, vol. XLIX, March 1939). For other problems, however, it is of interest to consider what effects differences in market structure will have, and this has led several writers to enquire into a model where pricing becomes the dependent and/or independent variable (cf. D. J. Harris, "The Price Policy of Firms, the Level of Employment and Distribution in the Short-run", *Australian Economic Papers*, vol. XIII, June 1974, for a useful survey).

basic independent variables are the three psychological relations: the propensity to consume, the marginal efficiency of capital, and liquidity preference; along with the wage unit and the quantity of money as determined by the Central Bank.<sup>1</sup> It is in the formulation of the three independent "psychological" variables that expectations play the crucial role in the system. In the stationary model a given level of expectation gives constant values for the independent variables in the system. In the shifting model the independent variables are free to move independently of the performance of the system itself.

This is then the division that Keynes believed to be the most useful for the analysis of his dependent variables, but the framework is general in the sense that it can be rearranged like a puzzle to investigate other dependent variables, requiring, naturally, a different division of the determinants of the economic system as between given factors and independent variables<sup>2</sup> (or, used to analyse, one at a time, different *quaesita*).

It seems obvious that the study of growth and capital accumulation, for example, requires productive capacity to become a dependent variable instead of being given: liquidity preference may become a datum as well as the propensity to consume. Population must be assumed to be constant or growing in a specified manner. The independent variable is then the marginal efficiency of capital or "animal spirits". One can then analyse the system with a stationary equilibrium approach, by looking at the effect of two different given constant levels of expectations on the rate of change of the quantity of productive equipment. Or one might prefer to look at the development of two different economies, say alpha and beta, where the entrepreneurs in alpha have higher "animal spirits" than those in beta (as in, for example, Joan Robinson, *op. cit.*).

Likewise the direct analyses of distribution, technical progress, the determination of prices and mark-ups would require their own particular divisions of the determinants of the economic system. Such an extension of Keynes's model to analyse these various problems has been the goal of post-Keynesian theory. The post-Keynesian approach is simply to use the general model of the *General Theory* to expand the analysis to cover different questions by taking the determinants of the Theory in different combinations. It is thus in no sense "ill-equipped", and has simply chosen to analyse additional problems because all the problems of interest cannot be analysed under Keynesian methodology at the same time nor with the same division of the economic determinants.<sup>3</sup>

<sup>1</sup> Keynes seemed undecided about the proper placing of the propensity to consume which in one draft was given, thus leaving his independent variables as "(1) the state of long-term expectation, (2) the state of liquidity preference and (3) the quantity of money measured in terms of wage-units" (*C.W.* xiii, pp. 481-2).

<sup>2</sup> Valuable insight into the use that should be made of this framework is found in Keynes's discussions on methodology with Harrod (cf. *C.W.* xiv, pp. 295-306); but similar points are also made in *G.T.* p. 297.

<sup>3</sup> It is in this sense that the approach is "one at a time" (Marshallian) rather than general (Walrasian) in the sense of being capable of handling all problems at once. This also suggests that such criticisms are misplaced methodologically, e.g. Samuelson's criticism of "Jean Baptiste Kaldor" resulting from Kaldor's perfectly legitimate decision to make the level of employment "given" in an analysis of the growth of productive capacity (cf. R. Lekachman, *Keynes' General Theory* (London: Macmillan, 1964), p. 345).

This view provides an explanation of Professor Robinson's often repeated *caveat* that the analysis of steady growth has to be fully worked out and understood before moves can be made to the analysis of dynamic change over time (as well as of her occasional excursions into the analysis of change over time). She is simply saying that the analysis must first be fully worked out on the level of Keynes's stationary model before we can hope to try a hand at the analysis of the shifting model, for it is indeed that model which she, like Keynes, has in the back of the mind when passing occasional *obiter dicta* about actual change in the system. Thus, as Keynes reminds us, the examination of any actual problem can be eased by putting it first in the form of the stationary model and then passing to the shifting position where, "not one of the factors is not liable to change without much warning, and sometimes substantially. Hence the extreme complexity of the actual course of events" (*G.T.* p. 249).

#### THE SPECIFICATION OF MODEL EQUILIBRIUM

Professor Blaug would thus seem to have mistaken the "strait jacket", since the particular one to which he refers was never worn and thus need not be thrown off. Further developments of the theory are then not to be found, as Blaug (*op. cit.* pp. 82-3) and Brown (*op. cit.* p. 487) suggest, in the writings of Clower and Grossman, nor of Phelps nor of Arrow. For Post-Keynesian theory the next step is not disequilibrium, but the model of shifting equilibrium in a monetary-production economy. But before that, to echo a familiar theme, the full analysis of the stationary monetary-production economy must be carried out and understood, for it is on this basis that the full model of shifting equilibrium will be seen and understood. It is doubtful whether the disequilibrium exchange mechanics of a "neutral" system will be of crucial importance for this task, for the simple reason that it takes a non-Keynesian specification of equilibrium as its starting point.<sup>1</sup>

The basic question that remains is the one well-posed by Hahn: how best to "tame" the real world to make it amenable to analysis and understanding. The early neoclassical economists thought that the best way to tame the world was to start with the analysis of the economy of Robinson Crusoe, extending it to a world of perfect competition and perfect foresight. The most recent development of this line of thought is to assume a given number of goods distinguished one from the other by their physical property, by their location in space and in time and by the state of the world, with "a price

<sup>1</sup> Nor is it possible from this point of view to agree that "Keynes was concerned with what we have called temporary equilibrium" (K. J. Arrow and F. H. Hahn, *General Competitive Analysis* (Edinburgh: Oliver and Boyd, 1971), p. 347), for this equilibrium is specified by zero market excess demands in all markets. To such a position Hahn's ("Expectations and Equilibrium", *op. cit.*) analysis can associate the required form of the expectational functions. In this view involuntary unemployment represents unsatisfied expectation and thus "disequilibrium". Keynes, however, posited equilibrium as the result of given expectations and could thus look upon involuntary unemployment as an equilibrium phenomenon for with short period expectations of producers realised there was nothing to move the system from its state of rest, this despite the fact that some markets did not clear.

defined for each good".<sup>1</sup> One can then demonstrate the conditions that would be required for the decisions of households and firms to be mutually consistent such that for no good does demand exceed supply at the assumed prices. Information about all possible present and future prices and the costs and availability of contingent actions is perfect and costless. All actions take place at a point in time and contain contingent elements (*ibid.* p. 15).

Such a position has been described as one in which, "every feature of an actual economy which Keynes regarded as important is missing" (*ibid.* p. 34). For if actions are sequential and "states depend on the actions of agents, some contingent markets could not logically exist" (*ibid.* p. 15). The theory as currently expounded is not yet in a position to involve sequence or "the description of the terminal state of economic processes" (*ibid.* p. 15). In short it cannot meaningfully relax the "taming" assumption of certainty and foresight (this is the main preoccupation of chapter 14 of Arrow and Hahn, *op. cit.*). It was the appropriateness of the assumption of perfect foresight within the analysis of a monetary-production economy that Keynes called into question in the *General Theory* for it depicted behaviour only likely to be found in a "lunatic asylum" – money and uncertainty could find no meaningful place in such a world where money was by definition "neutral". Instead Keynes chose to take the world as it was and to make an objective choice of the variables to be analysed (employment and money income) dividing the determining variables into those which could be considered given for the purpose of the analysis and those which were to be taken as independent – primarily the state of long-period expectations.

Instead of assuming that the future was known (or that there were sufficient future markets and that all future prices could be taken as known) he maintained the assumption that it was in the nature of a monetary economy that the future could not be known. He chose instead to work out the effects of different states of expectations on employment and income under the provisional assumption that differences between expectations and realisations would not effect general expectations – that is, to work with a model of stationary equilibrium. This is precisely the position and assumption that underlies the use of tranquility in the method of comparative dynamics in the post-Keynesian models, but with a different choice of given and dependent variables.<sup>2</sup>

<sup>1</sup> F. H. Hahn, *On the Notion of Equilibrium in Economics* (Cambridge University Press, 1973), p. 7.

<sup>2</sup> It is interesting to note that Hahn has returned to a concept similar to that which he suggested in "Expectations and Equilibrium" (*op. cit.*, p. 819) in an attempt to redefine the concept of equilibrium used in the theory of general equilibrium (cf. *On the Notion...*, p. 25). It is also interesting to note that this approach allows for constant expectations behaviour despite actual disappointment of expectation which allows a broader definition of expectational equilibrium than previously (cf. note 1, p. 215 above) and is thus closer to Keynes's stationary position. But without treatment of long-period expectations which positions Keynes's equilibrium one must suppose that Hahn's equilibrium is positioned by a not "too large" excess demand in any market so that disappointment is not "too great" to justify changing behaviour. It should, however, be emphasised that the distinction remains between (1) the specification of an equilibrium in terms of excess market demand and (2) the subsequent derivation of the expectational functions that are compatible with there being no force to change the situation (in the simplest general equilibrium model zero excess demand is the expectation, so market clearing and realised expectations are one and the same thing and thus Keynes's equilibrium must really be "disequilibrium"), and (3) Keynes's method of setting a given

The full model for analysing a monetary economy can be achieved by allowing disappointment of expectations to interact with the general state of expectations which is free to shift autonomously as well in what Keynes called his model of shifting equilibrium (*G.T.* p. 293). In such an approach one does not "tame" the problems of the real world by creating and analysing a world in which they are absent, and then searching for the minimum conditions for the existence of such a world. Rather one attempts to make an ordering of the categories of the real world that are the object of analysis. One need not assume that the world is different from what it actually is and then try to find the conditions required for that other world to actually exist, but rather one may simply look at the actual world in a number of stages with different orderings of that actual world, so as to analyse particular effects within it. This distinction could indeed be seen as nothing more than that between the Marshallian and Walrasian method.

#### CONCLUDING REMARKS

It has been argued above that the methodology that Keynes chose in confronting the analysis of an uncertain world was in terms of alternative specifications about the effects of uncertainty and disappointment and not in terms of their existence or absence. His procedure can be characterised in terms of three models of equilibrium, a static, a stationary, and a shifting equilibrium model, each depicting different assumptions about the effect of uncertainty and disappointment. This procedure produces an alternative approach to the concept of equilibrium which is, in addition, incompatible with the concepts *ex ante* and *ex post*. In fact, Keynes argued that his approach could not assume perfect foresight and full information, for under such an assumption his main theoretical contribution, the theory of effective demand, had no meaning.

Further, the paper argues that Keynes's own view of his general theoretical approach was that it could be used to analyse a range of problems in addition to that which he found most pressing, i.e. the determination of the level of output and employment. Different problems would, however, require different basic assumptions about the dependent, given, and independent variables in the system.

Finally, it is argued that what has come to be called "Cambridge" or "post-Keynesian" theory can be viewed as an attempt to analyse various different economic problems, e.g. capital accumulation, income distribution, etc., through the methodology of Keynes's "stationary model".

It would then appear to be a disservice to both Keynes's methodology and that of the post-Keynesian writers to accuse them of some other parentage, or

---

and constant level of general expectations, and finding the level of employment, compatible with those expectations, which allows for positions of less than full employment and for satisfied expectations such that there is no force making for change. See the similar point concerning Patinkin's analysis in P. Davidson, "A Keynesian view of Patinkin's Theory of Employment", *ECONOMIC JOURNAL*, vol. LXXVII, September 1967, pp. 562-3.

as some recent critics have done to bracket their writings with orthodox approaches in terms of their use of equilibrium. Their basic methodology is distinctly different as also is the concept of equilibrium which results therefrom. One may believe that further exploration of the orthodox approach may be useful. This does not alter the fact that it has not yet succeeded in relaxing its taming assumption concerning perfect foresight and uncertainty, nor that this is a drawback (strait jacket) that cannot be attributed to Keynes nor the post-Keynesians. Those who do see such similarities have seriously misunderstood the methodology of the economics of uncertainty and the specification of equilibrium that corresponds to this methodology.

J. A. KREGEL

*University of Southampton*

*Date of receipt of typescript: December 1975*

#### APPENDIX

For those who consider *ex ante* and *ex post* as ideas crucial to the exposition of the Keynesian system, Keynes's reasons for rejecting the concepts may be instructive as well as shedding light on why he chose the particular treatment of uncertainty that he did. The explanation is bound up with the conception of time. Keynes recognised that the essence of the problems of uncertainty and expectations is that time elapses between the taking of a decision and the ultimate outcome of the decision and further that the outcome itself may occur through a passage of time. Drawing the distinction between *ex ante* and *ex post* concepts is one way of making this point, none the less Keynes rejected this method because the passage of time between the decision and the outcome "was incapable of being made precise" (*C.W.* xiv, p. 179). If this passage of time could not be made precise, then there could be no definite way to link a particular decision to a particular outcome or to prove that there was a "definite relationship between aggregate effective demand at one time and aggregate income at some later time". This impossibility led Keynes to reject the Swedish approach "owing to my failure to establish any definite unit of time". In this context Keynes says "I used to speak of the period between expectation and result as 'funnels of process', but the fact that the funnels are all of different lengths and overlap one another meant that at any given time there was no aggregate realised result capable of being compared with some aggregate expectation at some earlier date" (*C.W.* xiv, pp. 184-5).<sup>1</sup> Given that one could identify an *ex ante* expectation one could never be sure of identifying a particular *ex post* result to be linked with that expectation.

Keynes thus substituted his stationary model which allows, although in a very arbitrary but exact way, the tracing through of the influence of any given state of aggregate expectations to the "long-period level of employment"

<sup>1</sup> "The point is that the real entrepreneur is never in a position to *measure* the realised cost of a single decision. This imports an element of vagueness into the revisions of past expectations on which his current expectations are in great part founded" (H. Townshend, review of Shackle, *Expectations Investment and Income*, *ECONOMIC JOURNAL*, vol. XLVIII, March 1938, p. 523).



associated with it. Accordingly he chose to define the short-run in terms of "the shortest interval after which a firm is free to revise its decisions as to how much employment to offer. It is, so to speak, the minimum effective unit of economic time" (*G.T.* p. 47, n. 1). Cf. also *C.W.* xiv, p. 333: "The relevant unit of time is presumably the interval which has to elapse before previous decisions can be effectively revised in the light of current facts." In setting up the stationary model he then assumed "a state of expectation to continue for a sufficient length of time for the effect on employment to have worked itself out so completely. . . The steady level of employment thus obtained may be called the long-period level of employment corresponding to that state of expectation" (*G.T.* p. 48). And even though "expectation may change so frequently that the actual level of employment has never had time to reach the long-period employment corresponding to the existing state of expectation, nevertheless every state of expectation has its definite corresponding level of long-period employment" (*ibid.* p. 48). In this way the relation between expectation and result could be made precise.<sup>1</sup>

In addition Keynes seemed to believe that it was not too far removed from reality to assume that short- and long-period expectations were more or less independent (i.e. that the system could shift along the aggregate supply and demand curves groping for the point of effective demand without the curves bodily shifting due to a change in expectations). If we think of the problem as follows the reasoning may become clear. Consider the producer of electrical power. Short-period expectation determines how many kilowatts he expects to produce and how much labour he wants to hire to produce them, given capacity. Long-period expectations determine how much capacity he should have at various future dates and determine overall investment decisions and plans. If in one quarter demand for electricity falls by 5%, is this likely to cause a revision of long-period expectations of required future capacity? Keynes answers no; thus an unrealised short-period expectation is independent of long-period expectation, "for it is of the nature of long-term expectations that they cannot be checked at short intervals in the light of realised results" (*G.T.* p. 51).

As a matter of everyday occurrence Keynes believed that entrepreneurs "do not, as a rule, make wildly wrong forecasts of the equilibrium position" (*C.W.* xiv, p. 182). But because of the difficulty of ascertaining the position "in practice there is a large overlap between the effects on employment of the realised sale-proceeds of recent output and those of the sale-proceeds expected from current output; and producers' forecasts are more often gradually modified in the light of results than in anticipation of prospective changes",

<sup>1</sup> This view contradicts Shackle's (*Keynesian Kalaidics* (Edinburgh University Press, 1974), p. 14) that the distinction between *ex ante* and *ex post* is "essential and indispensable" to an understanding of Keynes's work. Indeed, Keynes found the distinction misleading in that it prevented the analysis of factors be considered important. As pointed out in note 1, p. 213 above, the distinction represented little advance over earlier "expectations" theories. For example, cf. Brinley Thomas's review of the Swedish theories where Pigou is put on a par with the Swedes in recognising "the fact that entrepreneurs' anticipations of future changes lie at the core of the problem of fluctuations" (*Monetary Policy and Crises, A Study of the Swedish Experience* (London: Routledge, 1936), p. 75).

so that, "expected and realised results run into and overlap one another in their influence" (*G.T.* pp. 50-1). On this view Keynes could merge the expected and realised demand functions as being nearly identical. Entrepreneurs had a reasonable idea of the *shape* of the aggregate demand curve and Keynes felt that the existence of this knowledge was quite independent of both their ability to predict and their actions to determine the *position* of the curve on the aggregate supply functions. This, of course, does not imply that long-period expectations are fixed, just that they may be more directly affected by factors other than disappointment of short-period expectations, and thus that long-period expectations must be explicitly taken into account.