

# **The State of Short-Term Expectation**

M G Hayes

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# **The State of Short-Term Expectation**

**Abstract:** The claim that Keynes makes a tacit assumption in Chapter 3 of *The General Theory*, that short-term expectations are fulfilled, is unwarranted and unnecessary. The seminal paper by Kregel (1976) and its subsequent development by Chick, among others, which has contributed to the general acceptance of this claim, is critically evaluated in depth. The present paper clears the ground for a recognition that Keynes instead adopted the assumption of judicious foresight, which would now be called short-term rational expectations. This recognition in turn should encourage a reappraisal of Keynes's thought, by mainstream economists and others.

**Keywords:** Keynes – effective demand – formation of expectations

**JEL classifications:** B22 B31 E12

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M. G. Hayes, Robinson College, Cambridge CB3 9AN, United Kingdom.  
Email: [mgh37@cam.ac.uk](mailto:mgh37@cam.ac.uk)

## ***The State of Short-Term Expectation***

Does Keynes tacitly assume that short-term expectations are fulfilled in Chapter 3 of *The General Theory* (Keynes, 1936, hereafter *GT*)? Why does it matter?

I shall conclude that what matters is nothing less than the coherence of Keynes's critique of 'Classical' competitive equilibrium theory and that the reading-in of this assumption is a serious mistake. Keynes's avowed objective was to integrate the theories of money and value, to recast rather than abandon the theory of value as determined by the equilibrium of supply and demand (*GT*, p. 293). The consequence of losing sight, from the very date of publication of *The General Theory*, of this original objective has been the current dysfunctional state of understanding in which mainstream economists wrongly understand Keynes's work as the economics of rigidity, while heterodox economists (including the original Cambridge Keynesians) have largely abandoned competitive equilibrium theory (Sardoni, 2008; Lang and Setterfield, 2007; Lawson, 2005; Backhouse, 2004). The main purpose of this paper is to clarify the nature of Keynes's critique of Classical theory in order to permit a renewed engagement with his thought by mainstream economists, on their own terms yet addressing the real challenges raised by Keynes and not 'a composite Aunt Sally of uncertain age' (Keynes, 1971–1989, hereafter *CW*, vol. XIV, p. 215).

The argument begins by considering how and why the current consensus that Keynes makes this tacit assumption about short-term expectations has emerged. The following sections apply two tests of the validity of reading in the assumption, in terms of consistency, first with the text and second with the logical framework of *The General Theory*. Then we consider briefly how the tacit assumption is unnecessary because the principle of effective demand is itself a theory of the formation of short-term expectations by the equilibrium of supply and demand. Keynes argues that employment and output are in continuous equilibrium corresponding to the state of short-term expectation at any time. The conclusion is that the attribution to Keynes of the tacit assumption is unwarranted, unnecessary and misleading.

## 1. The current consensus

The present consensus is undoubtedly that Keynes does assume in *GT* Chapter 3 that short-term expectations are fulfilled, although he does not state this in so many words. For example, Chick (1983, p. 64) refers to ‘the assumption, maintained throughout most of the first Book of the *General Theory* (Chapter 5 is the exception), that firms’ estimates of planned aggregate demand are essentially correct’ and in the footnote to this sentence: ‘Kregel (1976) emphasises this point. It is a pity Keynes did not make more of it’. Hoover (1997, pp. 223–224) writes ‘Keynes regards the formation of short-term expectations as a second-order concern, and assumes, for purposes of exposition, that short-term expectations are always fulfilled’. Most recently, Allain (2009, p. 3) writes ‘When writing Chapter 3 of the *General Theory*, he implicitly assumes that entrepreneurs’ short-term expectations are fulfilled’.

The origins of the claim that Keynes made this tacit assumption appear to lie in Keynes’s 1937 lecture notes (*CW XIV*) and in the celebrated article by Jan Kregel (1976), which most authors cite in this connection. In the lecture notes, Keynes states

the theory of effective demand is substantially the same if we assume that short-period expectations are always fulfilled ... 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 difference it makes when short-period expectations are disappointed. (*CW XIV*, p. 181)

Kregel (1976) christens a model in which short-term expectations are always fulfilled ‘the model of static equilibrium’ and distinguishes this from the ‘stationary model ... that Keynes relies on, for the first 18 chapters of *The General Theory*’ and from the ‘model of shifting equilibrium’ (we consider these models in detail later). The immediate point to note is that neither Keynes nor Kregel suggest that Keynes actually made the assumption in *The General Theory* itself, tacitly or otherwise, that short-term expectations are always fulfilled. Kregel is careful to distinguish the static from the stationary model and sees the static model only in the 1937 lecture notes, not in *The General Theory* itself.

Why have so many writers felt it necessary to read this tacit assumption into *GT* Chapter 3? The nub of the matter is Keynes's definition of effective demand:

... the amount of employment, both in each individual firm and industry and in the aggregate, depends on the amount of the proceeds which the entrepreneurs expect to receive from the corresponding output. For entrepreneurs will endeavour to fix the amount of employment at the level which they expect to maximise the excess of the proceeds over the factor cost.

Let  $Z$  be the aggregate supply price of the output from employing  $N$  men, the relationship between  $Z$  and  $N$  being written  $Z = \varphi(N)$ , which can be called the *aggregate supply function*. Similarly, let  $D$  be the proceeds which entrepreneurs expect to receive from the employment of  $N$  men, the relationship between  $D$  and  $N$  being written  $D = f(N)$ , which can be called the *aggregate demand function*.

Now if for a given value of  $N$  the expected 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' expectation of profits will be maximised. The value of  $D$  at the point of the aggregate demand function, where it is intersected by the aggregate supply function, will be called *the effective demand*. (*GT*, pp. 24–25)

The question turns on the meaning of Keynes's description of adjustment to equilibrium and how this relates to expectation. There can be no doubt that Keynes is here concerned with expectation, expected proceeds and expected profits. Furthermore, aggregate demand is defined in terms of the expectations of entrepreneurs, who are treated as a group, rather than in terms of the expenditure of consumers and investors. Furthermore, since production takes time (as Keynes

emphasises, *GT*, p. 46), how do expectations relate to realised results and what exactly motivates entrepreneurs to change their employment decisions?

The consensus holds that the process of adjustment must be a dynamic process of convergence over time, motivated by the disappointment of expectations, so that equilibrium is reached and defined by the fulfilment of expectations. In grappling with the fact that Keynes specifies aggregate demand in terms of the expectations of entrepreneurs, writers have postulated the need for two aggregate demand functions, one in terms of entrepreneurial expectations, the other in terms of expenditure. There is some tension within the literature over which of the two demand functions defines the point of effective demand. The absence of the expenditure function in Keynes's text is taken as evidence that Keynes conflates the two, which is only possible if entrepreneurial expectations are fulfilled: therefore, it seems, this must be his tacit assumption.<sup>1</sup>

Again a point to note at once is that the idea of convergence of expectations to equilibrium is associated with the 'Swedish' approach, which predated Keynes and was expounded by Ohlin in the November 1936 Marshall Lectures (subsequently published as Ohlin, 1937), and which the main object of Keynes's 1937 lectures, titled 'Ex Post, Ex Ante', was to repudiate:

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. (*CW XIV*, p. 181)

Unfortunately these lecture notes were not published until 1973, which is one reason why Kregel (1976) is of particular importance as the beginning of a discussion about effective demand that appeared to have concluded with Amadeo (1989), until its recent re-emergence. Since Kregel (1976) has been widely recognised as the seminal

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<sup>1</sup> References to the extensive literature can be found in King (1994) and Hayes (2007), to which can now be added Hartwig (2007) and Allain (2009).

work on the treatment of short-term expectation in *The General Theory*, the next section takes this article as its starting point for considering the consistency of the claim that Keynes makes a tacit assumption with the text of *The General Theory* itself.

## 2. The test of consistency with the text of *The General Theory*

### 2.1. Kregel (1976)

The original purpose of Kregel (1976) was to defend the use of steady-state models by the Cambridge post-Keynesian School, notably Joan Robinson, against the claim that such models are inconsistent with the methodology of Keynes. Kregel argues that the core of *The General Theory* is the principle of effective demand, which can be expressed with static tools, with the disappointment of expectations and consequent dynamics taking second place. His overall proposition is that Keynes's concept of equilibrium as contingent on a state of expectation is radically different from the Walrasian perfect foresight model so that unemployment equilibrium (so defined) is possible even when expectations are fulfilled. There can be no disagreement with these primary propositions.

Kregel's article is now cited less for its principal purpose than for its definition of three models, of static, stationary and shifting equilibrium (see Table 1). Keynes himself referred to a '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' (*GT*, p. 293). In the 'static' model, the state of expectation is given and expectations are always realised; the system moves instantly to the point of effective demand. This model reflects the proposition in Keynes's 1937 lecture notes quoted above and corresponds to the tacit assumption. The 'stationary' model allows for individual expectations to be disappointed without affecting the underlying given state of 'general' expectations. Disappointed entrepreneurs then revise their expectations until, by trial and error, they hit on the point of effective demand. Finally in the 'shifting' model, the state of 'general' expectation can change, both independently

and as a result of individual disappointments. This model describes an economy ‘chasing an ever changing equilibrium – it need not catch it’ (Kregel, 1976, p. 217).

**Table 1.** Classifications of equilibrium

Type	State of long-term expectation		State of short-term expectation	
	Keynes	Kregel	Keynes	Kregel
Static	Given	Constant	Fulfilled	Realised
Stationary	Given	Constant	Determinate	May be disappointed
Shifting	Shifting	Shifting	Determinate	Disappointed

Although Kregel’s analytical key to Keynes’s method is elegant and has undoubtedly been persuasive, his reading of the text is open to serious objections. These can be summarised as the usage of the terms ‘static’ and ‘stationary’; the meaning of ‘period’ and ‘term’; the introduction of a distinction between individual and general expectations; the difference between a change in expectation and disappointment of expectation; the correspondence of production with short-term, not long-term expectation; and the implication that employment will normally be in disequilibrium.

Kregel’s choice of the term ‘static equilibrium’ to denote a state in which expectations are fulfilled is unfortunate: static equilibrium refers only to a point in time without necessarily implying anything about future outcomes. It is true that Walrasian general equilibrium theory reduces the future to the present, so that ‘static’ becomes associated with ‘timeless’, yet *The General Theory* is also (for the most part) static in its method of equilibrium analysis and anything but timeless. Indeed the term ‘stationary’ would be a better description of a state in which short-term expectations are always fulfilled, but Kregel uses this term for a different purpose, namely to denote a given *and constant* state of expectation. Again this usage is unsatisfactory, for the only place where Keynes assumes a constant state of expectation is where he considers the convergence of employment to a long-period equilibrium position (*GT*, pp. 47–50): an exercise in disequilibrium dynamics, hardly an example of stationarity.

Kregel draws ‘a distinction between particular individual (short-period) expectations and the effect of the state of “general” (long-period) expectations’ (Kregel, 1976, p. 210). This is not a distinction made by Keynes, who writes:

These expectations, upon which business decisions depend, fall into two groups, certain individuals or firms being specialised in the business of framing the first type of expectation and others in the business of framing the second. The first type is concerned with the price which a manufacturer can expect to get for his ‘finished’ output at the time when he commits himself to starting the process which will produce it ... The second type is concerned with what the entrepreneur can hope to earn in the shape of future returns if he purchases (or, perhaps, manufactures) ‘finished’ output as an addition to his capital equipment. We may call the former short-term expectation and the latter long-term expectation. (*GT*, pp. 46–47).

Kregel elides the concepts of period and term. To be fair, Keynes himself sometimes used these words interchangeably, including in the 1937 lecture notes. Yet in *The General Theory* itself, he was remarkably consistent in reserving the adjectival ‘-period’ to refer to the type of equilibrium (short-period, involving the adjustment of employment of existing resources, and long-period, involving the adjustment of the aggregate capital equipment through either production or physical depreciation, following Marshall) and the word ‘term’ to refer to the two different types of expectation (short-term and long-term). The distinction is important. For example, in the section about convergence to long-period employment just referred to above, Keynes refers to a constant ‘existing state of expectation’. Since Keynes defines employment as based on short-term expectation (itself partly a function of long-term expectation, so that we can follow him in referring simply to the state of expectation), in this section Keynes describes the long-period adjustment, including changes in the aggregate capital equipment as well as in employment, to a new state of (short-term) expectation. So long-period employment relates to the short, and not the long, term and to use the words interchangeably in this context creates confusion. Long-period adjustment might take a matter of months or a year or so, sufficient time to produce new capital-goods or scrap old equipment, while the long term, over which new

equipment yields its fruit, could be many years. Consider the difference between the interval from a decision to erect a new building until its completion and the useful life of the building itself.<sup>2</sup>

Furthermore, the distinction drawn by Kregel between ‘particular individual’ and ‘general’ expectations does not exist for Keynes. Keynes consistently refers to ‘the’ state of expectation, encompassing both short- and long-term expectation and both individual and general, with short-term expectation being in part a function of long-term expectation (*GT*, pp. 47–51). Kregel’s ‘static model’ certainly generates such a shared state of expectation and this may be part of the attraction of imposing this model as a reading of *GT* Chapter 3. However, the ‘stationary model’ which Kregel attributes to *The General Theory* itself does not contain a singular, shared state of expectation but has room for the disappointment of individual expectations while general expectations remain constant. This point is considered further in the next section in relation to the logical problems to which it gives rise.

The target of Kregel’s paper is, quite rightly, the claim that Keynes’s primary contribution is an emphasis on the recognition that expectations may be disappointed, where this claim is to be understood in the Swedish terms of *ex ante* and *ex post*. It is therefore ironic that, even though he shows (through the device of the ‘static model’) that disappointment of expectations has nothing to do with the principle of effective demand, Kregel still places a great deal of emphasis on the disappointment of short-term expectation, whether in the ‘shifting model’ where disappointment of individual expectations leads to change in the general expectation, or in the ‘stationary model’, where disappointment does not so lead.

By contrast, Keynes concerns himself mainly with change in expectations rather than with any disappointment consequent upon such change. The passage on

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<sup>2</sup> Sanfilippo (2011) records the profession’s chronic confusion over the meaning of long and short periods, terms, runs, etc and recommends abandoning this terminology in favour of making a clear definition, in any specific context, of parameters (i.e. elements that are given, *ceteris paribus*), independent and dependent variables; as does Keynes in *GT* Chapter 18.

convergence referred to above (*GT*, pp. 47–50) begins with the statement ‘Now, in general, a *change* in expectations (whether short-term or long-term) will only produce its full effect on employment over a considerable period’. The dynamic process of long-period adjustment of the capital equipment described here and elsewhere (*GT*, pp. 122–124, 287–288) takes place in a *given* state of expectation, after a change in expectation (by definition, unanticipated) has already taken place, with its consequent windfall gains and losses. Disappointment of expectations ‘cannot affect the *actions* of entrepreneurs, but merely directs a *de facto* windfall of wealth into the laps of the lucky ones’ (*GT*, p. 288).

Kregel states that Keynes made the assumption of ‘constant long-period expectations’ (in the static and stationary models), thereby separating out long-term expectation from the state of expectation as a whole and allowing short-term expectation to be disappointed. Kregel continues by stating that

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 ... 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 ... (Kregel, 1976, p. 212)

The confusion here (apart from the interchange of period and term once again) is with the possibility that realised results disappoint short-term expectations yet the state of *short-term* expectation (not ‘long-period expectations’) remains unchanged. Keynes writes ‘The *actually realised* results of the production and sale of output will only be relevant to employment in so far as they cause a modification of subsequent [short-term] expectations’ (*GT*, p. 47), and clearly this leaves open the possibility that such expectations remain unchanged.

Kregel gives the example of a producer of electrical power as follows:

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? (Kregel, 1976, p. 224)

The answer is clearly negative, but it is the wrong question. The question should be, if on any given day, demand for electricity falls 5% below expectation, should our electrical entrepreneur reduce the next day's employment? The answer is, probably not: one day's shortfall is unlikely to affect the state of expectation relevant to employment, i.e. the state of short-term expectation.

Finally, in Kregel's stationary and shifting equilibrium models, employment is more likely than not to be in disequilibrium at any time. In these models, the principle of effective demand does not determine employment at any time (unless we make the tacit assumption) but only the equilibrium position towards which employment would tend if individual expectations were stable enough to converge. By contrast, Keynes claims to offer a theory of actual employment at any time (*GT*, pp. xxxiii, 4, 245–247) based on the equilibrium of supply and demand (*GT*, pp. xxii–xxiii, xxxiv–xxxv, 3, 27–30), such that 'today's employment can be correctly described as governed by today's expectations' (*GT*, p. 50). Yet he himself refers to this as a 'theory of shifting equilibrium' (*GT*, p. 293).

Table 2 summarises the main differences of terminology between Kregel and Keynes. Although Kregel himself does not claim that Keynes made the tacit assumption, Kregel's hermeneutic key has been pivotal in encouraging later authors, including Victoria Chick, to reach that conclusion. It has therefore been necessary to dissect that framework in order to establish where it parts company from Keynes's text.

**Table 2.** Differences of terminology between Keynes and Kregel

	Keynes	Kregel
Division of expectations	Short-term expectation (employers) and long-term expectation (investors)	Short-period expectation (individuals) and long-period expectation (general)
Nature of stationary equilibrium	Given state of expectation (long-term and short-term combined)	Individual expectations may be disappointed but the state of general expectation is constant
Long-period equilibrium refers to	Capital stock	Expectations
Dynamic impulse	Change in expectation	Disappointment of expectation
Employment	Always in equilibrium	Usually in disequilibrium

## 2.2 Chick (1983)

Chick, both in her major text on *The General Theory* (1983) and a subsequent article (1992), offers perhaps the most sophisticated development of the received idea that the equilibrium level of employment in *The General Theory* is discovered, in principle, by the fulfilment of expectations. She argues that, for the purposes of exposition, Keynes must have made the tacit assumption (Chick, 1983, pp. 64–65, 71) and explicitly relates this to Kregel's static model (ibid., p. 67). She objects that

Keynes provides no theory of the process by which firms come to evaluate aggregate demand, the need for such a theory is obviated by Keynes's assumption ... that firms' estimates are correct. There is also no detailed discussion of the dynamics of adjustment of those estimates when they prove to be incorrect. (ibid., p. 76)

As justification for stating that ‘Keynes adopted, in the early chapters, the *assumption that firms’ forecasts of aggregate demand were broadly correct*’ she quotes in a footnote (ibid., p. 71, n. 15) the following sentence from Keynes:

[It] will often be safe to omit express reference to short-term expectation, in view of the fact that in practice the process of revision of short-term expectation 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. (*GT*, p. 50)

However, Keynes goes on to say:

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. ... Accordingly it is sensible for producers to base their expectations on the assumption that the most recently realised results will continue, except in so far as there are definite reasons for expecting a change. (*GT*, pp. 50–51)

The causation here runs from realised result to expectation, not the other way. Expectations conform to realised results, not realised results to expectations. There is nothing here to require that expectations based on realised results will in fact be fulfilled; there is indeed a hint here of the notion of conventional expectation (*GT*, pp. 152–153). It is true that there is no detailed discussion of the dynamics of expectations formation, but why is such a discussion necessary? It is not necessary if employment at any time is determined by effective demand, i.e. by the state of expectation itself.

Chick indeed recognises that, for Keynes, employment at any time is determined by the point of effective demand but, contrary to Kregel, distinguishes this from the equilibrium point corresponding to actual demand (Chick, 1983, pp. 77–78). She distinguishes determinacy from equilibrium and requires the tacit assumption only to the extent that we insist on reading *GT* Chapter 3 as an exercise in equilibrium analysis. In her words ‘Effective demand is an unfortunate term, for it really refers to the output that will be supplied; in general there is no assurance that it will also be

demanded' (ibid., p. 65). She therefore accepts the likelihood of unemployment disequilibrium, and indeed goes further:

Because underemployment equilibrium is an aggregate concept, it is impossible to believe that it would be met precisely: the probability of hitting the relevant point on aggregate demand exactly must be insignificantly different from zero. *Some* firms will always be surprised. Theorists more concerned with purity than with relevance, who cannot accept approximations, would therefore argue that some force for adjustment, however weak, must always be present, and since Keynes provides no dynamic learning process by which estimates of demand are adjusted when they are falsified, he fails as a theorist in their eyes. (Chick, 1983, p. 77)

Chick views this imprecision with equanimity and in her later methodological works has extended this to make a virtue of necessary compromise and formal vagueness in contrast with the sterility of what she calls 'Equilibrium Theory'. This leaves any theorist, who is concerned with both precision and relevance, uncomfortable with the idea that Keynes was unable to construct tight theory, especially as that is exactly what he claims to have done (*GT*, pp. 38–40). Yet Chick's conclusion follows relentlessly from the premises of the received post-Keynesian understanding of *The General Theory*, which does not accept Keynes's claim to offer a theory of employment at any time nor consider how the principle of effective demand might itself be a theory of the formation of expectations as equilibrium values. At this point, we move from exegesis into hermeneutics and the next section.

### 3. The test of logical consistency

In the previous section, I have compared statements of two distinguished authors with the text of *The General Theory* and found specific contradiction. The next question is whether their conceptual framework, upon which is based the claim of the tacit assumption as the solution for making sense of Keynes, is in fact consonant with that of Keynes and this, of course, is a matter of interpretation and judgement. My strategy is therefore to demonstrate logical inconsistency in the framework presented by Kregel and Chick, both internally and with the different framework of *The General*

*Theory* as revealed by the text and by Keynes's comments on the final draft and after publication. The key questions on which the argument turns are the existence, uniqueness and stability of the 'state of general expectation' implicit in Kregel's conceptual framework.

### 3.1. Existence

As noted above, Keynes constantly refers to 'the' state of expectation of entrepreneurs. What can this mean, since expectations are necessarily formed in the minds of individual entrepreneurs and why should they agree? Kregel's solution is to make the distinction between individual and general expectation (not made by Keynes), where individual expectation can be disappointed while general expectation persists. In whose mind, then, does the general expectation exist and secondly, how and why should individuals fall into line?

In Keynes's augmented-Marshallian framework, a 'short-term expectation' corresponds<sup>3</sup> to an expected price, the price which 'if it were held with certainty, would lead to the same behaviour as does the bundle of vague and more various possibilities which actually makes up [the entrepreneur's] state of expectation when he reaches his decision' (*GT*, p. 24, n. 3). A 'state of expectation' can in turn then be associated with a set of short-term expectations or expected prices for each Marshallian industry for producible goods.

This understanding of short-term expectation differs markedly from that of Kregel and Chick, who envisage firms estimating demand curves, whether at the industry or aggregate level (Kregel, 1976, p. 225; Chick, 1992, p. 150). Indeed this point connects directly with another disputed question, the assumptions about market

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<sup>3</sup> Keynes writes 'expectations as to the cost of output on various possible scales and expectations as to the sale-proceeds of this output' (*GT*, p. 47). Given the conditions of supply, there is a direct relation between sale-proceeds and price on the assumption of perfect competition.

structure in *The General Theory*.<sup>4</sup> Here we need concentrate, for present purposes, only on the distinction made by Chick between ‘perfect competition’ and ‘polypoly’, her term for competition between many small firms under uncertainty.

Chick rejects the price-taking of the received notion of ‘perfect competition’ because in her view it imposes the assumption of perfect foresight; she insists that under uncertainty all firms, even small ones, inevitably set prices. She asks: ‘How can firms take prices from markets which lie in the future? The short answer, of course, is that they cannot’ (Chick, 1992, p. 153). Her solution is to postulate that firms set prices, initially by making hypotheses about demand, constructing hypothetical demand curves as opposed to either expected or actual demand curves. A set of hypothetical demand curves traces out the firm’s supply curve and the firm then chooses the particular point on the supply curve which corresponds to its expectation of demand. In the case of polypoly, firms ignore strategic interdependence and base their expectation of demand (i.e. demand price) on their estimate of the price that clears expected supply and demand in the market as a whole. The analysis can be generalised to the cases of monopoly and oligopoly.

The problem with (or virtue of, depending on one’s perspective) this construction is simply that there is no reason why firms should arrive at the same expectations. It is therefore quite possible that individual expectations are disappointed (as both Kregel and Chick insist) but it leaves us without the singular, shared state of expectation referred to by Keynes. Any given level of employment may be associated with a myriad of different ‘states of expectation’ represented by all the different permutations of individual expectations that would lead firms, in aggregate, to offer that particular level of employment. Any hope of determinacy lies, then, only in the convergence of individual expectations to a general expectation

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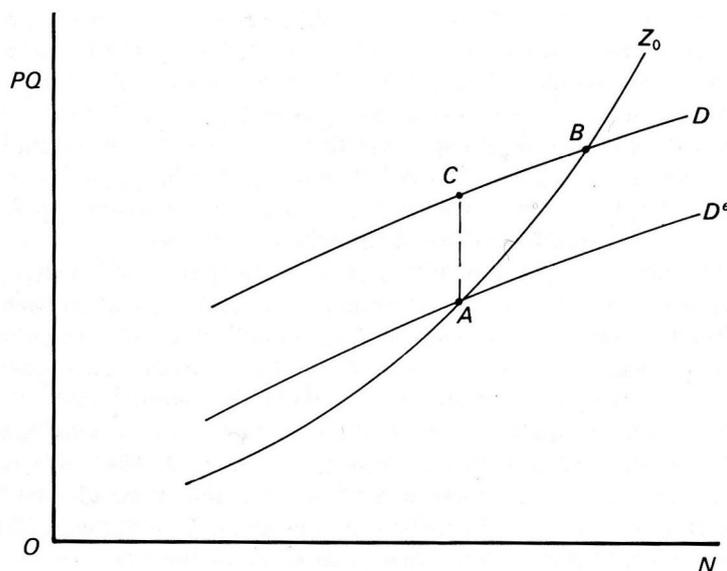
<sup>4</sup> Kregel states that Keynes did not adopt ‘any particular theory of competition’ (1987, p. 490) and Chick ‘that, once the question of uncertainty is addressed, the *General Theory* is compatible with any or all market structures’ (1992, p. 150). Partly this is due to a confusion in the literature over the meaning of Keynes’s degree of competition, which I have addressed elsewhere (Hayes, 2008).

which is correct in the sense that it corresponds uniquely to any given level of employment.

### 3.2. Uniqueness

Kregel defines his ‘general (long-period) expectations’ to correspond to Keynes’s ‘long-period employment’ (*GT*, p. 48) as the end-point of a process of convergence of individual expectations (Kregel, 1976, pp. 215, 223–224). Thus ‘the state of general expectations’ represents a set of expectations, which may not in fact exist in the minds of any entrepreneur, but is nevertheless an equilibrium position towards which individual expectations will tend by a process of trial and error. Chick (1983, p. 78) contains a diagram (Fig. 1) which describes this convergence of expected demand ( $D^e$ ) to the actual demand ( $D$ ) and of employment to its equilibrium value  $B$  (as distinct, in her view, from the moving point of effective demand, depicted by  $A$ ).

We begin at a point of unemployment equilibrium as defined by the fulfilment of expectations at  $A$ , where the actual demand curve (representing expenditure)  $D$  coincides with the expected demand curve (as perceived by entrepreneurs)  $D^e$ . An unanticipated increase in expenditure raises the actual demand curve  $D$  so that aggregate income ( $PQ$ ) rises to point  $C$ , where as drawn employment  $N$  and output  $Q$  are unchanged and prices  $P$  and profits rise.  $C$  is a position of unemployment disequilibrium with excess demand so entrepreneurs revise their expectations and  $D^e$  shifts upwards (not shown), although not necessarily all the way to the new actual demand curve  $D$  at once. The intersection of the revised  $D^e$  with the aggregate supply curve  $Z_0$  continues to represent a new point of effective demand  $A$ , say  $A'$  (not shown), not to be confused with the new point of unemployment equilibrium  $B$ . The expected demand curve continues to shift upwards as expectations are revised until actual and expected demand once again coincide and so also do the point of effective demand and the point of unemployment equilibrium, at  $B$ .



**Figure 1.** Effective demand vs. equilibrium in Chick (1983)

Kregel notes that convergence requires the assumption of independence between individual and general expectations: ‘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’ (Kregel, 1976, p. 215, n. 1). In Chick’s diagram, the centre of attraction is provided by the equilibrium of actual demand with supply conditions. So it seems that, *contra* Keynes, expectation does not really determine output and employment, except in the individual daily disequilibrium which Kregel and Chick regard as the normal state of affairs: the ‘state of general expectations’ is itself determined by the expenditure decisions of consumers and investors. The most one can claim for entrepreneurial expectation as an independent causal force is that the expenditure decisions of investors are determined by the state of long-term expectation. It follows that the state of short-term expectation is of no fundamental consequence and indeed, it is argued, Keynes himself accepts this view because after *GT* Chapter 5 aggregate demand is defined in terms of expenditure rather than entrepreneurial expectations.

Yet there is a lacuna in this interpretation of Keynes’s long-period employment as corresponding to an equilibrium state of general expectation reached

by a process of trial and error. Any such process of discovery must take place over time. If the end-point is to be defined by the equilibrium between expenditure demand and the conditions of supply, the aggregate supply curve must not shift (Kregel, 1976, p. 215). At the same time we are assuming that investment is taking place, creating new capital-goods and therefore continuously changing the conditions of supply.<sup>5</sup> Thus a further indeterminacy is introduced: if by chance individual expectations converge quickly, the state of general expectation will take one set of values; if convergence is more prolonged, the state of general expectation will take another. In fact there is a multitude of possible equilibrium positions which are not independent of the time it takes to find them. Thus we find ourselves immediately, even in what Kregel defines as the model of stationary equilibrium, with the problem which Kregel defines by the model of shifting equilibrium, in which the behavioural functions are constantly shifting and equilibrium need never be reached. We began with general expectation as something unknown to any individual and now it appears that there can be an indefinite number of states of general expectation, since each depends on how long it takes for individuals to discover it.

### 3.3. Stability

It could be argued that it is not important that the state of general expectation is unique, what matters for the coherence of the principle of effective demand is that individual expectations can be expected to converge upon the state of general expectation, whatever it may be at any given time. Yet even this claim cannot be taken for granted. Chick's diagram (Fig. 1) assumes as self-evident the existence of a well-behaved function mapping excess demand onto changes in expected prices, which Hicks (1939, p. 255), Arrow & Hahn (1971) and Vercelli (1991) have shown not to be the case in general when several markets are involved. What appears

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<sup>5</sup> This turns around the very criticism made, in my view erroneously, by both Pigou and Kalecki in their 1936 reviews of *The General Theory*.

obvious at the microeconomic level of a single market does not hold at the macroeconomic level.

In this area we can, for once, profit by taking a leaf out of the Walrasian literature (including its critics), much of which has been concerned with questions of stability and expectations formation. In Hicks's seminal analysis, the stability of the equilibrium depends on the elasticity of expectations and the simplest adaptive assumption, that expectations are revised in line with realised results (unit elasticity), does not lead to convergence and easily topples over into instability. Arrow & Hahn (1971, pp. 263–369) show that stability theorems even for models of pure exchange depend on an assumption of continuity which is easily over-turned by the possibility of bankruptcy. Vercelli (1991, pp. 100–104) identifies 5 *ad hoc* assumptions necessary to avoid both dynamic and/or structural instability and indeterminacy. Evans and Honkapohja (2001) present a theory of adaptive learning, in which agents are assumed to behave like econometricians, estimating the parameters of the system by running regressions. While their main concern is to establish that under certain conditions agents discover the one or more rational expectations equilibria defined by various standard Classical dynamic general equilibrium models, Evans and Honkapohja make it clear that these conditions are not guaranteed. From a Keynesian perspective, in which the equilibrium position is liable to discontinuous shifts due to changes in the state of long-term expectation or the propensity to consume, the ability of agents to form reliable and convergent estimates by the econometric analysis of past data is, at the very least, open to question.

The important distinction must be made between convergence from a position of simple disequilibrium *per se* and convergence from a position of short-period equilibrium to a position of long-period equilibrium. Both Kregel and the Walrasians are concerned with the former, extremely difficult, case. The latter is the Marshallian case which is analytically far more tractable and for which stability is much more assured (Hayes, 2006, pp. 99–100; 2007, pp. 75–77). It is this Marshallian case to which Keynes's long-period employment refers: the convergence of employment to a long-period position (i.e. in Keynes's sense, a state where the capital equipment has adjusted to the state of expectation) if a *given* state of expectation persists. In

Keynes's case, it is not individual expectations but the capital stock which is adjusting along the dynamic traverse.

It therefore appears that Kregel's state of general expectation neither exists in the minds of individual entrepreneurs nor can the dynamics of expectations formation be relied upon to bring individual expectations into line with the general state. There could not be a greater contrast with Keynes's singular 'state of expectation'. If we follow Kregel, we can no longer claim with Keynes to explain 'why, in any given circumstances, employment is what it is' (CW XIV, pp. 121–122) – it is all a matter of individual expectations which, as we have shown, have no firm anchor. In the final analysis, the whole thing falls apart and Keynes's shifting equilibrium becomes Kregel's shifting disequilibrium, in which we chase shadows through the twilight.

#### **4. Doing without the tacit assumption**

The task of this paper is mainly critical but would not be complete without an indication as to how it is possible to understand Keynes without making the tacit assumption. The essential insight is a recognition that the analytical core of *The General Theory*, as summarised in *GT* Chapter 18, is a static equilibrium model which links a set of independent variables and parameters with a set of dependent variables in a determinate fashion at a single point in time. 'Static' here means instantaneous, not unchanging; paradoxically, only a static equilibrium model can cope with discontinuous change. The object of *The General Theory* 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' (*GT*, p. 247, emphasis added).

The ultimate independent variables are the three psychological factors (the propensity to consume and the states of liquidity preference and of long-term expectation), the quantity of money and the wage-unit (*GT*, pp. 246–247). The parameters, the 'elements in the economic system we usually take as given' (*GT*, p. 245) are those of the Marshallian system, i.e. endowment, technology and preferences, together with the degree of competition. The dependent variables, income and employment, have a functional relation (*GT*, p. 246) with the set of expected prices at industry level which constitute the singular state of short-term expectation. It

is these expectations that proximately determine output and employment, as the title of *GT* Chapter 5 indicates (*GT*, p. 46).

The principal difficulty is to understand how these expected prices can be determined by the equilibrium of supply and demand at any time. As Keynes takes pains to emphasise in *GT* Chapter 4, output is not homogeneous, so that the expected prices, on which today's employment depends, relate to a variety of goods all with different production periods, at different stages of completion, and with a multitude of different dates for final delivery. Thus the expected prices are prices for delivery at different future dates, yet all must be determined today if they are to be more than individual subjective expectations and form a singular state of short-term expectation.

As already noted, Keynes specifies aggregate demand in terms of the expectations of entrepreneurs. Fundamental to the notion of competitive equilibrium is the independence of supply and demand, and in Keynes's exposition on p. 25 of *The General Theory* it is not obvious how entrepreneurs can face a demand curve which represents their own expectation of proceeds. We are driven to separate Keynes's entrepreneurs into two groups, employers of labour and dealers in goods, corresponding to the traditional division of industry and commerce between manufacturers and merchants. There is some textual warrant for doing so, in Keynes's reference to the medium-term expectations of distributors (*GT*, p. 47), but he does not elaborate. Some further light on this whole topic is shed by Keynes's correspondence with Hawtrey over the final draft of *The General Theory* (*CW* XIII, pp. 596–632). Hawtrey questioned the need to introduce expectations at all:

You may say that all this is to be assumed to refer to expectations. But are employers to be supposed to make all these calculations in terms of real income, current investment and the propensity to consume? Each employer's (hypothetical) expectation is presumably confined to his own product, and I do not see how you are going to aggregate these particular expectations into a total of consumption and a total of investment, nor is there any reason why these totals, if they can be formed, should be consistent with one another ...

I note that in chapter 5, where you examine the expectations by which employment is determined, you do not use the expression 'effective demand'

at all. The passage on page 51, with the appended footnote, does something to link up 'effective demand' (in your sense) with actual sales. But I do not think it gives an accurate picture of the process by which productive activity is determined, because it does not distinguish between the retailers, whose business it is to watch sales and replenish their stocks, the manufacturers, who for the most part produce in response to firm forward orders, and the primary producers, whose output is to a great extent imposed upon them by natural conditions. In chapter 8 the underlying idea seems to be that effective demand simply reflects actual demand. It seems to me that what you want to express is that if employers make a miscalculation and actual sales either outstrip or fall behind production, the result will be increased or diminished employment. (CW XIII, pp. 597–598)

Keynes replied:

The main point ... seems to me to affect the whole supply and demand theory and not my version of it in particular. I have the impression that you restrict the supply and demand method to market prices only, that is to say, they relate to the higgling of the market in respect of stocks which already exist. But that is not what Marshall or Pigou or most modern economists do. The demand which determines the decision as to how much plant [and labour] to employ must necessarily concern itself with expectations. And I am in this respect simply trying to put more precisely what is implicit in most contemporary economics ...

I am, however, rather in despair about this comment of yours, since I cannot interpret it otherwise than as a symptom of my having wholly and absolutely failed in this section to convey to you what I am driving at ... For, it would all come to exactly the same thing if one were to suppose that the decisions of employers were not brought about by *any rational attempt to foresee on the lines I indicate*, but merely functioned by modifications at short intervals solely based on the method of trial and error. (ibid., pp. 602–603, emphasis added)

Hawtrey rejoined:

Of course it is true that ‘the demand which determines the decision as to how much plant to employ must necessarily concern itself with expectations’. My objection from the beginning has been to the expression of the expectations in the form of a *numerical aggregate* ... The expectations of demand are to be found, strictly speaking, only in the minds of those, such as the retailers, who sell to the final purchasers. But it is not the retailers who give employment. That devolves on manufacturers and other producers whose expectations are concerned primarily with the orders they receive from the retailers ... I do not dispute that there are *some* instances where a definite relation can be traced between an expectation as to demand and the volume of employment given. But even then it may be very difficult to say which of a number of different and mutually inconsistent expectations in the minds of many different people contributing to a decision are to be regarded as authoritative, or over what period of the future the expectations are to be deemed to extend. (ibid., pp. 610–611)

Keynes replied:

I am doing no more here than accept the principles which underlie supply curves other than purely market supply curves ... I find it an aid to thought to introduce my numerical expression for demand in between the general state of expectation and the scale of employment which results from it. But I agree with you that it is in a sense an intermediate conception which drops out in the final analysis. The only thing that really matters is that the given state of expectation, whatever it is, does produce by its effect on the minds of entrepreneurs and dealers a determinate level of employment. But I should find it difficult to do without my schematism as a convenient method of quantifying the state of expectation ... You say that practically the only cause determining employment that I deal with is the actual sales. This is not my intention, which is to take account of all possible motives and expectations influencing entrepreneurs. (ibid., pp. 615–616)

Hawtrey rejoined, prophetically:

You say you find the introduction of a numerical expression for expected demand ‘an aid to thought’. But I fear that to any reader who wants to

visualise your theory in relation to the facts the introduction of such an awkward fiction will be a stumbling block. The difficulties I have described to you will prevent clear thinking. I have been further impressed by these difficulties in re-reading chapter 20 on the employment function. For example, on p. 280, how can you say that  $D_w$  is a unique function of the total effective demand,  $D_w$ , when each is a fortuitous aggregate of the vagaries of thousands of individual opinions which need not be consistent with one another? (ibid., p. 623)

Keynes's final position was:

The process here is exactly the same as that by which a market price is fixed for a share of which no one really knows the prospective yield accurately. I was really conceding too much in saying it was a fiction. The market is regularly engaged in assessing in terms of an exact numeral a complex of rather vague probabilities. (ibid., p. 632)

This correspondence shows that Keynes refused to relinquish effective demand in favour of Hawtrey's suggestion, which became received wisdom, that employment equilibrium should be defined by the fulfilment of expectations in the Swedish style. Keynes must have seen that to abandon his particular treatment of expectation, in which effective demand replaces Marshall's short-period Normal prices determined by supply and demand, was to lose the determinacy of his theory of value. He insists that effective demand is an objective numerical quantity determined by market forces. He does not question Hawtrey's division of industry and commerce, which is part of their common Marshallian heritage, but seems to regard it as belonging to a lower level of abstraction (c.f. Marshall, 1920, p. 283). Nevertheless, Hawtrey was right to fear that it would prove difficult to visualise what Keynes meant by effective demand and his division between employers and dealers suggests a way forward.

Most production takes time so that an employer needs to make a production decision today, based on expectations of the price of finished goods at the time of delivery. Employers specialise in managing the risks of production and dealers the risks of marketing finished goods. Although a large firm may combine both functions, they remain distinct in principle. It is therefore reasonable to assume that production

takes place only when an employer receives an order, usually from a dealer or another employer. An order is a forward contract which fixes the price payable for the goods when they have been finished and delivered. The dealer's business includes accepting the risk that the spot price for the finished goods may have changed by the time they are delivered. Non-transferable and sometimes unwritten forward contracts are the standard method of business, used far beyond the limits of organised futures exchanges.

Each type of good has a different production period and delivery date for an order placed today, depending on the technical conditions of its production. Competition between the employers in an industry will establish a common supply price for delivery of any given quantity of finished goods at different dates in the future. An industry supply curve could be drawn, relating a range of different supply prices and quantities for delivery in (say) three months.

Dealers hold stocks of finished goods in warehouses or on shelves, together with undelivered goods currently on order and in production under contract. The price they are prepared to bid for forward deliveries of new production will depend on their expectations of the final demand over the course of the relevant production period and beyond. They attempt to forecast how the future expenditure of consumers and investors (including other firms) will affect stock levels. Their bids will partly depend on whether stocks are too high or low, relative to the most efficient level for operating purposes, and also on their speculative expectations of price movements. Competition between the dealers in an industry will establish a common demand price for delivery of any given quantity of finished goods at different dates in the future. An industry demand curve could be drawn, relating a range of different demand prices and quantities for delivery in (say) three months.

Aggregate demand depends on the expectations of dealers, not directly on the expenditure of investors and consumers.<sup>6</sup> Except in the few cases where forward orders are placed by the final customer and of some services, it could not be otherwise, since current expenditure can be made only on goods that are already finished. Furthermore, while the prices fetched by finished goods sold today are often a reasonable guide to the prices that can be expected upon delivery for goods of which production is just about to begin, this is not necessarily so. That is precisely the judgement that has to be made by the dealers.

Given the expectations of dealers, the above construction establishes a forward market price for each good on which production is to begin today and these prices, I suggest, are the elements of the state of short-term expectation. To each set of expected prices there corresponds a determinate, equilibrium level of employment at any time. Expectation may shift from day to day, yet each day employment and output are in equilibrium. The full development of this approach to understanding the principle of effective demand can be found elsewhere (Hayes, 2006, 2007).

At no point does this definition of equilibrium require the fulfilment of expectations. Disappointment of short-term expectations may, or may not, change the state of expectation but these disappointments are likely to be trivial compared to the effect of sudden shifts in the states of long-term expectation or of liquidity preference. The formation of expectations is always a matter for the present moment and it is not necessary to tangle with insoluble problems of expectations formation under dynamic conditions of unpredictable discontinuity.

## 5. Conclusion

The claim, that Keynes's exposition of the principle of effective demand in Chapter 3 of *The General Theory* involves a tacit assumption that short-term expectations are

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<sup>6</sup> This distinction opens the door to a post-Keynesian theory of consumption, where consumption partly depends on what dealers are prepared to offer, and to a non-marginalist theory of value in which the subjective preferences of consumers play a secondary role (Mongiovi, 2000).

fulfilled, is unwarranted and unnecessary, owing more to Stockholm than to Keynes. The interpretative framework that requires the assumption has undermined Keynes's claim to offer a determinate theory of employment at any time and helped to lead post-Keynesian economists away from competitive equilibrium theory altogether. This in turn has left the Classical theory of competitive equilibrium unchallenged on its own terms and in substance, despite the increase in technical sophistication, in the same state that it was before Keynes wrote.

To read *The General Theory* as a theory of employment as in equilibrium at any time does not preclude us from using tools other than equilibrium theory to investigate how the economy behaves over time. On the contrary, competitive equilibrium analysis must be confined to its legitimate domain, the present moment or at most, the short term. Keynes's short-term expectations are, by his own words, what we would now call short-term rational expectations. Keynes refers to a 'rational attempt to foresee' (see above) and in his 1937 lecture notes against the Swedish method, to 'judicious foresight'. The correspondence with Hawtrey suggests that this is the meaning of Keynes's statement in those notes that 'The main point is to distinguish the forces determining the position of equilibrium from the technique of trial and error by means of which the entrepreneur discovers where the position is' (CW XIV, p. 182).

It seems that, according to Keynes, entrepreneurs do not commit systematic errors, at least in the short term ... yet unlike the stationary New Classical world, the position of equilibrium can shift abruptly with a change in the state of long-term expectation. The method of rational expectations equilibrium analysis cannot legitimately be applied to the long term. Today's short-term expectations and employment may be equilibrium values, but they can shift discontinuously between today and tomorrow and no mathematics based on continuous functions can bridge the abyss. We need different tools to explain phenomena which involve progress through time, such as economic growth, fluctuations and crises. Keynes's distinction between the theory of stationary equilibrium and the theory of shifting equilibrium remains the essential starting point.

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