

Keynes's degree of competition

Abstract: *This paper argues that Keynes's theory of aggregate employment assumes perfect competition (understood as price-taking, in the modern sense promoted by Joan Robinson in her 1934 article) in the markets for current output and for existing capital-goods. The degree of competition, to which Keynes makes a single cryptic reference, refers to the social and institutional obstacles to the free movement of resources, associated mainly with closed shops of entrepreneurs and workers. Keynes is here invoking an older, Marshallian, concept of competition. The implication is that the received understanding of the terms "expectation" and "liquidity" in *The General Theory* needs re-assessment.*

Key words: *Keynes, perfect competition, degree of monopoly, expectation, liquidity*

The present consensus of the Post Keynesian school is that Keynes did not in *The General Theory* (Keynes, 1973a) adopt "any particular theory of competition" nor "any assumption about the degree of competition except that it was constant" (Kregel, 1987). *The General Theory* is held to be compatible with both perfect and imperfect or monopolistic competition (Davidson, 1962; 2002); Chick (1983; 1992) argues that atomistic competition under uncertainty must be understood as polypoly, at the other end of a graduated spectrum from monopoly, a matter of degree and not of kind. Conversely, the consensus holds that *The General Theory* does not depend on the assumption of imperfect competition, in contrast with Kalecki's theory of employment (Davidson, 2000).

This paper claims that the theory of aggregate employment in *The General Theory* assumes price-taking *exclusively*, despite the single cryptic reference to the "degree of competition" as one of the parameters of the model capable of variation (1973a, p. 245). I shall argue, following the distinction noted by Joan Robinson (1934), that Keynes's degree of competition is a term that reflects Marshall and Pigou's understanding of competition among entrepreneurs and workers in supply, and does not refer to the conditions of demand faced by an individual firm. Thus in Robinson's and the modern usage of the term, *The General Theory* assumes perfect competition, although I shall argue that Keynes limited his own use of this term to its wider,

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traditional, meaning¹. The relevance and importance of this subtle difference of interpretation from the received consensus is that it materially affects our understanding of the meaning of the terms “expectation” and “liquidity” in *The General Theory*, although this paper can do no more than give a preliminary indication of the nature of the reappraisal that is necessary.

Perfect competition, the degree of competition and the degree of monopoly

Joan Robinson’s article on perfect competition (Robinson, 1934) conveniently marks a watershed between the two concepts of perfect competition which separate this paper from the Post Keynesian consensus. Robinson’s aim was to define perfect competition solely in terms of demand, as “a situation in which a single seller cannot influence price”, and to undermine and dismiss the traditional idea, of perfect competition as “a situation in which a single seller cannot make more than normal profits”, associated with the free movement of resources (1934, p. 104). Post Keynesians along with all other modern economists have followed Robinson, while Keynes remained on the side of tradition. I will first consider the development of the modern concept of price-taking since Robinson, before returning to assess the traditional understanding of perfect competition.

According to Stigler (1957, p. 10), Marshall uses the term “perfect competition” in his *Principles* only once, in the context of labour supply and somewhat disparagingly, and mainly discusses “free competition” and “perfect markets” (Marshall, 1974, pp. 448, 284, 270). The primary characteristic of a perfect market is a uniform price *ex works*, and perfect information refers only to knowledge of market prices (p. 278), in those markets that actually exist. Even the term “price-taking” hardly does justice to Marshall, since he is well aware that prices must be set by firms and not, in general, by an auctioneer. “Price-following”, without a single price-leader, may be nearer the mark, but this would be an unfamiliar usage. Market prices are observable, but normal prices are always expectations formed by entrepreneurs; the adjustment between normal supply and demand is never perfect (pp. 119, 306), and Marshall never resolves how expectations reach equilibrium outside a stationary or steady state.

¹ Robinson wrote that “Keynes did not accept the ‘perfect competition’ of the text-books, but some vague old-fashioned notion of competition that he never formulated explicitly” (quoted by Sawyer, 1992, p. 107).

Pigou uses, with reference to firms, the term “simple competition”, defined as “conditions such that each seller produces as much as he can at the ruling market price, and does not restrict his output in the hope of causing that price to rise” (1932, p. 213). In the context of workers he refers to “perfectly free competition among work-people and labour perfectly mobile” and here also makes a link between the imperfection of competition and the frictional resistances that prevent the instantaneous adjustment of wages to the demand for labour (1933, p. 252).

Robinson notes that Chamberlin (1933) preceded her in criticising explicitly the use of the term “perfect competition” (notably by Knight, 1921) for its suggestion of a frictionless, risk-free world. Chamberlin coined as an alternative the term “pure competition”, which was noted by Lerner in his definition of the “degree of monopoly” (Lerner, 1934) and is generally insisted upon by Davidson. Chamberlin associates perfect competition with smooth adjustment and perfect foresight, while pure competition means simply price-taking, the assumption that agents take prices as parametric, i.e. independent of their own quantity decisions. He contrasts pure competition with monopolistic competition, regarding Robinson’s term “imperfect competition” as confusing the issue, for reasons that will become clear below. “Monopoly ordinarily means control over the supply, and therefore over the price. A sole prerequisite to pure competition is indicated - that no one have any degree of such control.” (Chamberlin, 1933, p. 7). This is an important definition to which we will return.

Hicks follows Robinson in defining perfect competition as a neglect of “the influence on supply which may arise from calculations made by sellers about the influence on prices of the sales they make themselves. (Similarly for demand).” (Hicks, 1946, p. 6). He emphasises that “a general abandonment of the assumption of perfect competition, a universal adoption of the assumption of monopoly, must have very destructive consequences for [the determinacy of] economic theory”. He then writes “It is, I believe, only possible to save anything from this wreck - and it must be remembered that the threatened wreckage is that of the greater part of general equilibrium theory - if we can assume that the markets confronting most of the firms with which we shall be dealing do not differ greatly from perfectly competitive markets.” (pp. 83-84). At the time when Hicks was writing (1939), Keynes also wrote in a similar vein about the empirical evidence against short-period diminishing returns that “Mr Dunlop, Mr

Tarshis and Dr Kalecki have given us much to think about, and have seriously shaken the fundamental assumptions on which the short-period theory of distribution has been based hitherto” (1973a, p. 411).

Robinson’s complaint in 1934 was that the two different notions of perfect competition were “very closely linked in many minds and lumped together” (1934, p. 104). What we now call price-taking was certainly bound up closely with arguments that competition would allocate resources to their socially optimal use in the absence of frictional resistances: “the free play of self interest, so far as it is not hampered by ignorance, tends in the absence of costs of movement, so to distribute resources among different uses and places so as to render rates of return everywhere equal ... [and where there are costs of movement, so as to] raise the national dividend and, with it, the sum of economic welfare to *a maximum*” (Pigou, 1932, pp. 142-3). There is much to be said for following Chamberlin in preferring the term “pure competition” when price-taking alone is meant (or “price-following”), except that it is not in common use (even Lerner reverts, from 1934, p. 161) and Robinson herself explicitly rejects it (1934, pp. 105-6). Certainly Arrow and Hahn, masters of precision, follow Robinson and Hicks in using the term “perfect competition” to mean only price-taking and are explicit that it does not automatically mean the assumption of all the futures markets necessary for Knight’s perfect foresight (Arrow and Hahn, 1971, pp. 16, 33).

The modern dominance of the Walrasian model has obscured the important role of time, not only in Keynes, but in Marshall and Pigou. Departures from competitive equilibrium have come to be seen purely in terms of absolute obstacles to competition, to the exclusion of the time needed to adjust supply to changes in demand. At the centre of Marshall’s system is the concept of normal prices, to which Robinson’s second definition of perfect competition relates. Prices above the normal level (conversely if below) induce an increase in employment in the short period and an increase in the aggregate capital stock in the long period, in either case encouraged by actual or potential competition from new entrants, which expands supply and thus tends to restore normal equilibrium. An important point is that even under perfect competition, prices may remain above the normal level for a period because of the time required to relocate or train specialised labour, or to relocate or produce

particular capital-goods; these frictional delays are quite separate from the social obstacles to competition that are not strictly physical necessities. Marshall wrote:

“The central fact of the problem of value under competitive conditions is that scarcely any important result is true in regard to both short periods and long: a great part of the many barren controversies, that have raged on the matter, results from attempts to refute statements relating to long periods by others relating to short periods, or conversely ... though monopoly and free competition are ideally wide apart, yet in practice they shade into one another by imperceptible degrees: that there is an element of monopoly in nearly all competitive business: and nearly all the monopolies, that are of any practical importance in the present age, hold much of their power by an uncertain tenure; so that they would lose it ere long, if they ignored the possibilities of competition, direct and indirect ... absolute monopolies are of little importance in modern business compared with those which are ‘conditional’ or ‘provisional’: that is, which hold their sway only ‘on condition’ that, or ‘provided’ that, they do not put prices much above the levels necessary to cover their outlays with normal profits. If they did, then competition would probably make itself felt ... many monopolies which seem absolute are yet to some extent liable to be assailed by indirect routes; and are incomplete and subject to the ‘condition’ that the monopolist makes no such extreme use of his power as will induce others to force their way through obstacles and set up effective competition” (Marshall, 1923, pp. 396-8).

This quotation, and especially the condition that monopolistic prices are not set “much above” the level consistent with normal profits, provides a first clue to the meaning of Keynes’s degree of competition, in terms of the conditions of supply rather than demand. Marshall’s monopolist could choose to set the price at the competitive level, and thus deter any prospect of new entry; but the level in fact chosen, on an unspecified balance of probable advantage, will depend on the intensity of the competitive threat. Pigou is more pessimistic about the power of competition:

Thus influences acting through the price system are continually tending to bring about such an allocation of resources among different kinds of production that the value of the [marginal] yield of each sort of resource is the same for all of them. This tendency is, of course, seriously distorted by monopolistic practice in various guises and degrees; so that, even if the economic system remained in a stationary state for a long period, it would never work itself out completely. Moreover in practice all sorts of disturbing factors are continually intervening. The pursuer never actually catches the pursued, but he is always chasing after him; and in the process of this chasing is adjusting the allocation of resources among different uses as nearly as he can so as to make the values of the

marginal private returns to them (subject to monopolistic distortions) everywhere equal ... The so-called doctrine of maximum satisfaction is ruined by the [fact, inter alia] that, as observed above, entry into certain occupations is hindered by monopolistic practices, whether operated by employers or trade unions” (Pigou, 1949, pp. 36-37)

A link between Pigou’s monopolistic practices and the degree of competition emerges in Keynes’s correspondence with Joan Robinson during the drafting of *The General Theory*. Robinson commented on the third proof of Chapter 2 and the first proof of Chapter 18 in the course of a week in June 1935. She objected (Keynes, 1973b, p. 639) to the inclusion of the words “monopolistic practices on the part of employers” in the sentence: “Apparent unemployment must, therefore, be the result either of monopolistic practices on the part of employers or of temporary loss of work of the ‘between jobs’ type or of intermittent demand for highly specialised resources or of the effect of a trade union ‘closed shop’ on the employment of free labour” (1973a, p.16, as it originally appeared in the third proof, Keynes, 1973c, p. 367). In the margin next to Robinson’s comment, Keynes wrote “I meant practices by employers corresponding to trade union closed shops” (1973b, p. 639, n1). She also pointed out that “The degree of competition is one of your given factors” (1973b, p. 649). These comments led Keynes to delete the reference to monopolistic practices by employers in Chapter 2 and to insert the reference to the degree of competition in Chapter 18 (1973c, p. 502). These amendments are likely to have been made simultaneously, and suggest that Keynes regarded the degree of competition as covering the monopolistic practices of both employers and trade unions.

Despite Robinson’s objective in her November 1934 paper of replacing the traditional notion of perfect competition with her own, there can be no doubt that when she suggests, and Keynes uses, the term “degree of competition”, they mean it in the traditional supply-side sense, since she herself allows the term to refer to competition both between and within industries, so that:

“At first sight it may appear strange that the degree of competition *within* an industry should be affected by the elasticity of the total demand curve. But after all it is natural that this should be so. For the form of the demand curve represents the degree of competition between the product of this industry and other commodities. The stronger the competition from substitutes for this commodity the smaller the degree of competition within the industry necessary to secure any given elasticity of demand for each separate producer.” (Robinson, 1934, p. 116).

Robinson's degree of competition *within* an industry is the degree to which individual entrepreneurs, including potential new entrants, compete with each other; the degree of competition *between* industries, reflected in the industry demand curve, reflects the degree to which the products of other industries are substitutes, and thus the degree of competition from entrepreneurs in those other industries. Robinson is right that the supply and demand aspects of competition are not unrelated, since they both affect the balance of advantage which Marshall's monopolist must take into account. The degree of competition in supply governs the extent to which the monopolist *can* set prices above normal without attracting new entry, while the degree of competition in demand affects the *incentive* to restrict supply and increase price accordingly. By insisting in her 1934 paper on the short-period incentive to the exclusion of the long-period threat of new entry, Robinson deliberately limits the content of the term "perfect competition" to the short period and to current output, since she regards the concept of long-period normal profits as devoid of substantive content and thus as providing no rigorous basis for the idea of competition in supply. For her, it is a sufficient condition of perfect competition that price equals short-period marginal cost, without reference to long-period average cost and the adjustment of the capital equipment in each industry. It makes no difference whether this equality is achieved by competition within or between industries; the two concepts become equivalent.

Lerner's 'degree of monopoly' is a measure of the degree of competition in the markets for current output, but for the very reasons we are here exploring, the degree of monopoly does not necessarily represent the inverse of the elasticity of demand, as usually represented (e.g. Davidson, 2002, p. 32). Lerner points out that the ratio itself (the difference between price and short-period marginal cost, divided by short-period price) is no more than a measure of monopoly power *in force* and only equals the inverse of the elasticity of demand in monopolistic equilibrium (1934, p. 170), since the monopolist may set the price below the profit-maximising level either to deter entry or through ignorance (or complacency).

Further light is shed on this point by Keynes's response to Dunlop and Tarshis (1973a, pp. 394-412), which incidentally vindicates Chamberlin's contention that Robinson's use of the term "imperfect competition" leads to confusion. Here Keynes is concerned with the possibility that price exceeds marginal cost and its relation to the evidence that real wages rise, rather than fall, with increases in output. The degree

of monopoly (meaning here simply the observed ratio) is the result of a “degree of imperfection of the market” or a “degree of imperfection of competition” (1973a, pp. 410-411), which allows prices to depart from marginal cost (1973a, pp. 407, 410). Keynes distinguishes between the degree of imperfection of competition and “the degree in which producers take advantage of it” (1973a, pp. 410). His own tentative hypothesis as to why the degree of monopoly might fall, as output increases, does not assume that firms maximise revenue by equating marginal revenue with marginal cost, but quite the opposite: that they depart from short-period optimisation and equate price to long-period average cost rather than short-period marginal cost; this failure to optimise is permitted by the degree of imperfection of competition. This is certainly not the monopolistic competition of Chamberlin or the imperfect competition of Robinson.

What is of crucial importance for the present purpose is that the degree of competition need not be associated with any degree of monopoly in the sense of Lerner. Chamberlin’s definition of monopoly in terms of the control of supply is relevant here. If competition is less than perfect, in the traditional Marshallian sense, price-taking firms may be earning profits above the normal level because of natural or contrived barriers, to entry by new firms, or to increased employment or investment by existing firms, but they cannot increase these profits by restricting their own individual output, unless they can also act together as a cartel and achieve monopoly. Similarly, trade unions may be able to restrict entry to a particular occupation and keep wages up accordingly, but a closed shop does not restrict increases in the employment of union labour by an individual firm.

From his response to Dunlop and Tarshis, it is clear that Keynes admits the possibility that imperfect competition (in the traditional sense) may lead to a degree of monopoly (in Lerner’s sense), but he is also explicit (1973a, pp. 399-400) that he does not allow for a degree of monopoly in *The General Theory*. The next section will consider at greater length the evidence that *The General Theory* assumes price-taking, but at this stage we must note only Keynes’s agreement (1973a, p.17) with the “first classical postulate” (that the wage is equal to the marginal product of labour) of which the corollary is that, “subject only to the same qualifications as in the classical theory”, price equals marginal cost so that the degree of monopoly is zero. These “qualifications” play no part in *The General Theory*, since Keynes’s purpose was to

demonstrate his point of departure from the classical system, not to rehearse familiar arguments².

This returns us to the central problem of reconciling a zero degree of monopoly with Keynes's reference to a given degree of competition. By now it should be clear that while the degree of competition may result in a degree of monopoly, it has a wider meaning. In the case of firms, even if price always equals marginal cost in the short period, it does not follow that price ever equals long-period average cost (indeed Shapiro argues that perfect competition in the latter sense would make investment quite irrational, 1997, p. 90). In the case of workers, the first classical postulate remains valid in its unqualified form, even if trade unions restrict entry to occupations and keep wages in particular trades above the levels associated with the free movement of labour. The removal of the reference to "monopolistic practices on the part of employers" from the sentence referred to earlier (Keynes, 1973a, p.16), is entirely appropriate, since Keynes's adoption of the first classical postulate in its unqualified form would not be consistent with the monopolistic restriction by employers of the level of output and employment. Keynes's degree of competition thus refers to competition among entrepreneurs and workers, and to the obstacles to the free movement of resources (capital-goods and labour) into and between industries and occupations, which result from "closed shops" of either employers or workers along with the other social and institutional resistances connected with voluntary (but not frictional) unemployment (Keynes, 1973a, p. 6).

The degree of competition is thus quite different from the degree of monopoly, which measures (in monopolistic equilibrium) the extent to which a firm can influence the demand price for its output by varying its supply offer, and which for a price-taker is by definition zero. A measure of the degree of competition for a firm in *The General Theory* would be long-period average cost divided by long-period price, by contrast

² A more complex reason is that the theory of monopolistic competition is an exercise in partial equilibrium analysis, and an aggregate theory based on imperfect competition (such as Kalecki's) requires that the mark-up be independently determined. The mark-up(s) cannot be derived from objective demand curves without circularity, since these depend on aggregate employment. The aggregate employment function, relating effective (note, not aggregate) demand to employment (1973a, pp. 280-282), can be uniquely defined only on the basis of a physical aggregate supply curve for industry as a whole, and therefore only on the assumption of price-taking, in the absence of auxiliary assumptions about mark-ups. Keynes's degree of competition means that firms can make profit in excess of long-period average cost, but he assumes that individual firms set output so that marginal cost equals expected price, rather than setting price to marked-up average cost. The source of the excess profit is the "closed shop" at industry level.

with the degree of monopoly defined as the ratio of the excess of price over short-period marginal cost to the price; the degree of competition may be less than the long-period maximum (100%) even if the degree of monopoly is zero. For workers, a measure of the degree of competition would be the labour actually available to firms, divided by the aggregate labour individual workers are willing to offer at the going wage. Whether any of these measures can be observed is another matter.

Perfect competition (meaning price-taking) in *The General Theory*

If the previous section has shown that Keynes's reference to the degree of competition is compatible with the assumption of perfect competition (in the sense of price-taking or zero degree of monopoly), it remains to be demonstrated that the rest of *The General Theory* is in fact based on that assumption. As the extensive literature illustrates, many have interpreted Keynes as assuming quite the opposite; nowhere does he state unequivocally what he assumes. Perfect competition (in both senses) was the bench-mark assumption of Marshallian economics, even after Robinson and Chamberlin, so clearly Keynes might just have taken it for granted that an explicit statement was necessary only when departing from the standard case — he claimed to be writing essentially in the classical tradition (1973a, p. xxxi); yet for the present purpose a more convincing demonstration is required.

Keynes's single reference in *The General Theory* to perfect competition contrasts it with imperfect competition in a phrase that echoes Pigou's *Economics of Welfare* (1932): "Again, if we have dealt otherwise with the problem of thrift, there is no objection to be raised against the modern classical theory as to the degree of consilience between private and public advantage in conditions of perfect and imperfect competition respectively" (Keynes, 1973a, p. 379). In his post-publication correspondence with Ohlin, he writes "The reference to imperfect competition is very perplexing. I cannot see how on earth it comes in. Mrs Robinson, I may mention, read my proofs without discovering any connection" (Keynes, 1973c, p. 190); and to Pigou: "Imperfect competition and associated problems is the only *other* branch of theory which is interesting people at the moment, judging from what reaches me." (Keynes, 1979, p. 176, emphasis added). Together these comments provide circumstantial evidence that Keynes did not depart from the standard assumption of price-taking, yet they are not conclusive.

The only test now available to us is an assessment of the consistency of the text, both internally and with or against the hypotheses of perfect and imperfect competition respectively. I do not accept as valid tests, for this purpose, claims that perfect competition is inconsistent with involuntary unemployment (e.g. Dutt, 1987; Marris, 1997), or that Keynes “must have” or “should have” assumed imperfect competition in order to achieve his object of demonstrating involuntary unemployment; the validity, or otherwise, of such claims is a question that must be addressed elsewhere. The objective here is solely to establish Keynes’s own assumptions independently from his conclusions.

We have already noted Keynes’s acceptance of the first classical postulate (1973a, p. 17). Further direct textual evidence that *The General Theory* assumes price-taking is the equation of expected marginal proceeds with marginal factor cost (p. 55); the definition of short-period supply price as the sum of the marginal factor cost and marginal user cost, or marginal prime cost (pp. 67, 68, 53); the definition of long-period supply price as long-period average cost, including supplementary, risk and interest costs (p. 68); and reference to aggregate supply functions as embodying the *physical* conditions of supply (p. 246). The ambiguity that these references could be construed as equating supply price (in the competitive sense just defined by Keynes) to marginal revenue when there is a degree of monopoly, rather than to demand price, is settled, to my mind conclusively, by the statement that: “In a single industry its particular price-level depends partly on the remuneration of the factors of production which enter into its marginal cost, and partly on the scale of output” (p. 294). This view is corroborated by the definition of the elasticity of output (p. 283).

Indirect textual evidence exists in the form of Keynes’s abstraction from financial and industrial structure and the distribution of income. Taking these in reverse order, the first two are straightforward. The distribution of income, given the distribution of wealth (pp. 110, 245), is endogenous: there is no suggestion of a fixed mark-up. There are several explicit references to the effect of changes in output on the functional distribution of income (pp. 79, 83, 117, 120-121, 287). On industrial structure, no assumption is made about the number and size distribution of firms, which are endogenous and determined by the available capital-goods and the degree of

competition³. The third point, Keynes's abstraction from corporate financial structure, is more contentious.

The absence from *The General Theory* of an explicit treatment of corporate securities has always troubled the Post Keynesian school (notably Robinson, Davidson and Minsky, who have placed great emphasis on differences in the marketability or convertibility of capital-goods themselves and their titles, partly under the rubric of the given degree of competition). Here it is important to differentiate, on the one hand, competition between entrepreneurs in moving capital-goods into or between industries (whether through existing or new firms, and whether existing or new capital-goods) from, on the other hand, competition in the markets for capital-goods. Competition may be imperfect in the former sense at the same time as it is perfect in the latter sense and indeed that, I believe, is what Keynes assumes.

Keynes's discussion of capital-goods throughout *The General Theory* reflects the standard classical assumption that all assets are held directly by individuals (including workers, in principle) in their capacities as rentiers or entrepreneurs (note the inclusive definition of entrepreneur for this purpose on p. 46). Corporate shares merely divide the entrepreneurial element of corporate income between rentiers. Rentiers and entrepreneurs alike invest in capital-goods, whose prices are dominated by the expectations of rentiers, who can, if they have the stomach, become entrepreneurs and undertake production themselves. The investment decision is framed in portfolio terms that apply equally to both entrepreneurs and rentiers, and there is no systematic difference between them in their access to loans of money or the hire of capital-goods (although there may be differences between individual entrepreneurs in their access to credit, pp. 144-145). The main difference between rentiers and entrepreneurs is that rentiers, like workers, receive an income fixed in terms of money for a given level of employment of their services, while entrepreneurial profit (including the rentier share of corporate profit) depends on future realised results.

Keynes treats capital-goods as freely transferable among entrepreneurs and rentiers: nowhere is this more clear than in his treatment of capital-goods in Chapter 12 of *The*

³ The assumption of a fixed number of firms in a footnote (p. 55, n2) is required, inter alia, only for the Classical marginal productivity theorem to hold at the aggregate level, which Keynes does not assume in general.

General Theory as if they were individually traded on the stock exchange. He states explicitly that “certain classes of investment are governed by the average expectation of those who deal on the Stock Exchange as revealed in the price of shares, rather than by the genuine expectations of the professional entrepreneur ... a high quotation for existing equities involves an increase in the marginal efficiency of the corresponding type of capital” (p. 151). For the value of an individual capital-good to be independent of its situation in a particular firm or industry requires the assumption of perfect competition in the market for capital-goods, that it can be transferred without frictional cost or delay to whomever expects to make the best use of it. Thus all finished goods, including stocks of both consumption- and capital-goods of all vintages, have equilibrium market prices that can be realised at any time and are independent of the circumstances and output decisions of particular investors and firms.

The discussion of “new and old investments” in the Appendix to Chapter 14 of *The General Theory* relates to the distinction between the efficiency of an asset and the rate of interest. The value of an old asset may be greater or less than its original supply price, so as to bring its efficiency into line with the corresponding rate of interest. Any such difference between value and original cost, apart from physical depreciation and changes in the term structure of interest rates, reflects a change in the states of expectation or liquidity preference, not a difference of convertibility. For Keynes the essential difference between liquid and fixed capital (where liquid here means finished output or raw materials which can be sold) is solely that the yield of liquid capital consists of a single current term rather than a prospective series; there is no suggestion that it reflects the relative ease with which the value of their prospective yields can be converted to money (p. 73). Note that the holding period (p. 225) may be shorter than the economic life of a capital-good. A divergence of the bid and offer prices at the end of the holding period would mean the prospective yield from an asset could not be defined independently of the intended holding period. The assumption of perfect competition in the markets for capital-goods is necessary if the value of the asset is to be defined uniquely in terms of the prospective yield over its economic life in a given state of expectation, abstracting from the circumstances of particular firms and investors.

Thus it appears that Keynes assumes perfect competition (in the sense of price-taking) in the markets for current output and existing capital-goods. This does not necessarily imply perfect competition in the traditional sense, of the free movement of entrepreneurs into industries or non-union labour into organised trades, nor the absence of frictional and voluntary resistances to the movement of labour; nor does it mean that individual entrepreneurs have equal access to credit. Yet in none of these cases of imperfection in competition does Keynes need to assume that sellers can “control supply” and so arrive at a position of monopolistic equilibrium. The imperfections in competition among entrepreneurs and workers are fully consistent with price-taking or perfect competition in the modern sense.

Implications

This paper has argued that *The General Theory* assumes perfect competition in the markets for current output and for existing capital-goods, with the degree of imperfection of competition understood to refer to the social and institutional obstacles to the free movement of resources, associated mainly with closed shops of entrepreneurs and workers. If this is correct, our understanding of the meaning of the terms “expectation” and “liquidity” in *The General Theory* must be reassessed.

The Post Keynesian use of the term “expectation” has sometimes encompassed opinion, whether subjective or putatively objective, about any aspect of the future, including quantities and the shapes of supply and demand curves, and extending far beyond future market prices. An acceptance that Keynes assumes perfect competition in the markets for current output allows a return to his more precise Marshallian definition of an expectation, as an expected price,⁴ and furthermore, an expectation shared by all participants as an equilibrium forward market price, determinate and, at one level, objective. Many have been puzzled by the definition of aggregate demand as “the proceeds which *entrepreneurs* expect to receive from the employment” (Keynes, 1973a, p. 25, emphasis added, see also pp. 28-29, 89), rather than in terms of the expenditure of consumers and investors, the aggregate demand of “Keynesian” economics. The answer is that Keynes’s entrepreneurs must be understood as

⁴ Marshall (1974, pp. 304-314). Keynes refers to proceeds rather than price (1973a, p. 24, n3), but the ordinary and aggregate supply functions define a unique relation between proceeds and price (1973a, p. 44).

fulfilling two separate functions on either side of the market, as employers of labour on the one hand, and as wholesale and retail dealers on the other (see Marshall 1974, p. 283; Keynes, 1973b, p. 616). Production takes place when an employer receives an order, usually from a dealer or another employer. Production to order implies, under perfect competition, the existence of a set of forward markets, for each good that is producible today, for delivery at the end of its production period. Competition between employers establishes a unique supply price for any given quantity, and competition between dealers, whatever their individual expectations about future spot prices, establishes a demand-price at which each dealer's demand is in equilibrium. Under perfect competition, it is of no consequence if the employers are also dealers in their own or other employers' products; the analytical division corresponds merely to the two types of decision. If any speculation about future spot prices by employers is treated as a dealer activity, the equilibrium forward prices of current output become shared short-term expectations, which permits unique definition of "the" state of expectation, to which Keynes frequently refers.

If *The General Theory* assumes perfect competition in the markets for capital-goods, why does Keynes so emphasise the liquidity of money, when his assumption treats all capital-goods as equally marketable or convertible? For some, this may be sufficient grounds for rejecting the proposition that Keynes assumes perfect competition. Why then does he discuss *degrees* of liquidity (p. 226), and furthermore, suggest that in certain historic environments *land* has "ruled the roost" in the hierarchy of liquidity (p. 241)? If the assumption of perfect competition is to be qualified in practice so that differences in the liquidity of assets are allowed, as a function of their degree of convertibility, this suggestion is startling. Land can never have been preferred for its convertibility, let alone as the medium of exchange. Keynes claims that historically it has possessed high liquidity, despite low convertibility. Conversely, in his discussion of organised investment markets which come closest in practice to the ideal of perfect competition, he treats their 'liquidity' (his quotation marks) as an illusion and something distinct from true liquidity. Listed equity securities have high convertibility, but low liquidity, in *The General Theory*.

In my view, Keynes distinguishes between the attributes of convertibility and liquidity: there is more to his conception of liquidity than convertibility. In principle, an asset with low convertibility may have high liquidity, and *vice versa*, however

counter-intuitive this may now seem. Liquidity is intimately related with long-term expectation in *The General Theory*, and unlocking its meaning is fundamental to a complete understanding of the book.

In conclusion, this understanding of Keynes's degree of competition reveals more clearly the continuity between his work and that of his classical predecessors; enhances our appreciation of the theoretical consistency of *The General Theory*; explains his abstractions from the distribution of income and from the industrial and financial structure of an advanced economy with corporate securities and banks; and requires a material reappraisal of the received understanding of his concepts of expectation and liquidity.

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