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RATIONAL SPIRITS AND THE POST KEYNESIAN MACROTHEORY OF MICROECONOMICS**

BY

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1 RATIONAL AND NON-RATIONAL THEORIES OF ECONOMIC BEHAVIOUR

According to Dornbusch and Fisher (and the editors who requested a survey of ‘non-rational (sic) theories of the formation of expectations related to the microfoundations of macroeconomics’) the post Keynesian ‘rejection of individual rationality and maximization as a basis of behaviour by firms and households has kept the approach at odds with the mainstream of the profession that has been attempting to bring macroeconomics into closer touch with microeconomics’ (1984, p. 571). This interpretation of post Keynesian theory as rejecting the assumption of rational agents, the homo economicus of Classical theory, appears to be based on two factors. First, and probably the most pervasive, is the pre-eminent role given to ‘animal spirits’ in the determination of the level of investment. The second is the rejection of any possibility of bringing Keynes’ theory into ‘closer touch’ with traditional microeconomics, reflecting Hicks’ view that the investigations of the microfoundations of macroeconomics have demonstrated that it is the former which is the branch of theory most in need of foundations. Post Keynesian theory thus proposes the microfoundations of microeconomics, and the development of a theory of the behaviour of money prices based on liquidity preference. The two points are related by the fact that Keynes’ explanation of the ‘rational’ response to uncertainty is the use of money as a store of value, the price of money being determined by the effect of uncertainty on liquidity preference and the decisions to hold positions in all other goods then determining their prices so as to bring their rates of return into equality with the money rate of interest.

The idea of a macrofoundation for microeconomics within post Keynesian theory in fact predates the modern microfoundations discussion and can be found in the work of Kalecki on the degree of monopoly, Andrews on full-cost pricing, Weintrob on the stability of the mark-up and, more in general, the use of these approaches to provide a macrofoundation for the macroeconomic models of economic growth linked to the names of Robinson, Kaldor and

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Pasinetti. As this brief essay cannot cover the entire range of work in this area we simply note the representative work of Marris, Eichner, Wood, and Earl and concentrate on a simplified presentation of the relation between uncertainty, money and Keynes' theory of value.

2 KEYNES AND 'RATIONAL SPIRITS'

For most interpreters Keynes' concept of 'animal spirits' is purely subjective, without any basis in the objective occurrence of events. It is thus incapable of theoretical generalisation and, as emphasised by Shackle in particular, incapable of being described in terms of the theory of mathematical probability based on a frequency distribution of randomly occurring perfectly known events. It is thus said to be incapable of 'rational' representation.

Few proponents of this view (but see Dow and Dow for an important exception) seem to have taken the trouble to follow Keynes' explicit references linking the concept to his earlier work on the subject in his *Treatise on Probability*. There he clearly states that decisions will be based on the probability of a proposition determined by means of a process which 'is not ... subject to human caprice. A proposition is not probable because we think it so. When once the facts are given which determine our knowledge, what is probable or improbable in these circumstances has been fixed objectively, and is independent of our opinion. The theory of probability is logical, therefore, because it is concerned with the degree of belief which it is *rational* to entertain in given conditions, and not merely with the actual beliefs of particular individuals which may or may not be rational' (1921, p. 4, emphasis in the original). It is important to note that Keynes is not here arguing that every individual will attach the same probability to a proposition, for different individuals will have different facts at their disposal and will have different past experiences (he even suggests that 'the constitution of the human mind may vary in some degree from man to man,' *ibid.* p. 18). Thus 'What we know and what probability we can attribute to our rational beliefs is, therefore, subjective in the sense of being relative to the individual. But given the body of premises which our subjective powers and circumstances supply to us, and given the kinds of logical relations, upon which arguments can be based and which we have the capacity to perceive, *the conclusions which it is rational for us to draw, stand to these premises in an objective and wholly logical relation*' (*ibid.* p. 19, emphasis added). Keynes thus considers his theory to be both objective and rational in the sense that any two individuals, faced with the same evidence and with the same experience, would place the same degree of rational belief in a proposition as expressed in an identical probability.

The problem that concerns Keynes is how individuals reach rational beliefs when their knowledge of propositions is not certain. Keynes considers two cases of determination of rational belief when knowledge is 'uncertain.' The first relates to the formulation of a probability which is based either on uncertain
information or 'doubtful arguments' (*ibid.*, p. 3), while the second concerns the case in which it is impossible even to formulate a rational belief, in which case it is rational to allow 'animal spirits' to prevail. In his *General Theory* Keynes argued that traditional theory excludes both types of uncertainty, that it analyses typical human decision-making as if all individuals had certain knowledge of what he calls primary propositions. In Keynes' terms this might be expressed as follows.

Let \( h \) be the evidence obtained from direct experience about a primary proposition \( p \), such that a secondary proposition \( ph \) expresses the highest degree of rational belief, \( a \), i.e. that associated with certainty: 'The peculiarities of certainty is that knowledge of a secondary proposition involving certainty, together with knowledge of what stands in this secondary proposition in the position of evidence, leads to knowledge of, and not merely about, the corresponding primary proposition' (*ibid.*, p. 15). Since this knowledge is also presumed in statistical probability theory Keynes criticised it as an adequate method to describe 'uncertain' events.

Keynes' analysis of the probability of an event, heads, of a fair coin, would include in \( h \) the facts that the coin is fair and has one head and one tail, as \( p \) the proposition that heads will appear in 50% of an infinite number of events, in order to determine the degree of rational belief or the probability, \( a \), expressed in a secondary proposition \( ph = a \). Here we note that Keynes is not concerned with the probability of the occurrence of a perfectly described set of possible events, but with the probability of the proposition \( p \) which asserts a probability for the event, i.e. whether, and in what degree, it is rational to believe \( p \). The uncertainty reflects the inconclusive basis of our knowledge explaining the occurrence, not of the existence of the occurrence.

The probability expressed by this secondary proposition, as any other statement of probability, Keynes argues, is relative to \( h \), the favourable and contrary evidence; the probability will measure the balance of, and thus be relative to, this evidence. When \( h \) contains an infinite number of repetitions there is no evidence unfavourable to the proposition and the probability asserted by the secondary proposition is unity. In Keynes' sense the certainty expressed by the secondary proposition implies knowledge of the primary proposition. The experience (the infinite number of events) that is included in \( h \), which Keynes calls direct, is not obtained by argument. But once it has been used to obtain a probability it can be dispensed with, e.g. once we have made the experiment of tossing the coin and the secondary proposition asserts a probability of certainty we have direct knowledge of the primary proposition which is considered as true in the same way as if we had direct knowledge of it.

There is, however, a second type of uncertainty. Keynes argues that in certain circumstances it may be impossible to assert a probability, to formulate the degree of rational belief in a proposition: 'Is our expectation of rain, when we start out for a walk, always *more* likely than not, or as likely as not? I am prepared to argue that on some occasions that *none* of these alternatives hold,
and that it will be an arbitrary matter to decide for or against the umbrella. If the barometer is high, but the clouds are black, it is not always rational that one should prevail over the other in our minds, or even that we should balance them, — though it will be rational to allow caprice to determine us and to waste no time on the debate. "... 'It is not the case here that the method of calculation, prescribed by theory, is beyond our powers or too laborious for actual application. No method of calculation, however impracticable, has been suggested' (ibid., p. 32). If no probability can be expressed in a secondary proposition, or where it is possible to attach a probability but it cannot be expressed in such a way which allows comparison with the probability attached to another proposition, the rational decision-maker will have to follow his animal spirits. Although Lawson (1985) limits the definition of uncertainty to only those cases where no probability can be attached, Keynes appears to consider incalculability and incomparability as equivalent as expressions of uncertainty.

Post Keynesian criticisms of the use of the frequency theory of probability to describe uncertainty have tended to combine, and sometimes confuse, these two arguments. For example, Shackle has argued that the investment decision is a 'crucial' decision which does not bear repetition: it cannot include repeated 'trials.' Further, it may be impossible for the entrepreneur to identify all the possible sides of the coin as part of the direct experience included in h. The sum of the probabilities of all propositions, p, envisaged thus cannot be constrained to unity.

It is in this respect that Shackle's objection to the use of statistical probability based on a frequency distribution to represent the uncertainty associated with an investment decision can be recognised. Investment decisions will in general relate to conditions in which secondary propositions express uncertainty. But, if it is possible to calculate a probability through the formulation of a secondary proposition concerning the primary proposition p that an investment will yield a certain rate of return for a given h, Keynes' approach suggests that every entrepreneur faced with this same situation (and with the same mental capacity) will attach the same degree of rational belief to the proposition and act on it in precisely the same way. If they do not, it must be because of the subjective differences which attach to different individuals including differences in their evaluation of the content of h. While Shackle defines such decisions as 'irrational,' they are only irrational within the statistical theory of probability; within Keynes' terminology such conditions simply represent a case of less than certain rational belief. It does not imply the necessity of caprice or irrationality within Keynes' theory. It is thus important not to confuse the inability to calculate a statistical probability based on a frequency distribution, which simply leads in Keynes' theory to a degree of rational belief which is less than certain, with the more extreme proposition that it is impossible to form a degree of rational belief, because there is no relevant experience available so that it is impossible to assign a probability, or that it is impossible to compare degrees of rational belief in a way which allows the formulation of
a decision without reference to the rationality of animal spirits or what one might call 'rational spirits.'

In this respect we may note that the emphasis that the theory of rational expectations places on the bases for forming expectations does appear to meet Keynes' insistence that the theory of probability should refer not to the occurrence of events, but to our assertions about the occurrence of those events, to the formation of expectations. Rational expectations might thus be described as a theory concerning the formulation of secondary propositions containing primary propositions that are statistical probabilities of events generated on the basis of an economic model and which have probability approaching certainty as the observations of the events occurring over time included in \( h \) become large. Here the certainty of rational belief derives from the presumption that the subjective probability distribution of the value of the predicted variable contained in the experience related to the secondary proposition \( p|k = a \) conforms to the objective distribution which generates the actual values of the variable. But, as Davidson (1982–83) has pointed out, this will only be the case generally if the process generating the events about which individuals have to form expectations are ergodic. In Shackle's view this is equivalent to assuming there are no 'crucial experiments.' Or, in Keynes' terms, in a stochastic system which is ergodic every secondary proposition would have to express a certain rational belief, which also produces knowledge of the primary proposition, given that \( h \) includes all available information. Individuals would thus also have direct knowledge of the objective process. It is then not necessary to assume that the economic model which furnishes the primary propositions is coincident with the real world, for it may be a transform, or a reduced form, which is only remembered after the structural equations have been forgotten. Thus, although rational expectations do address the problem of the formation of expectations in terms of the probability of rational belief expressed by secondary propositions, they are limited to ergodic processes.

It would thus appear that the term 'rational,' as used by traditional theory, can only refer to the limited conditions of certainty of rational belief in a world governed by ergodic stochastic processes; the possibility of decision or choice in uncertain conditions is thus excluded, or classified as 'non-rational.' But, as seen above, Keynes attempted the formulation of a theory of expectations

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1 I shall continue to use ergodic and non-ergodic in the sense in which they have come to be known although it is apparently quite easy (as a statistician in Göttingen pointed out to me on the back of an envelope some years ago) to produce non-ergodic systems that are predictable from their past behaviour.

2 Instead of contesting the meaning of 'rational' it might be better to adopt Pareto's (1963) terminology and define Keynes' treatment as relating to 'non-logical' actions, i.e. to cases where the objective end of an action differs from its subjective purpose; in particular Pareto's 'Genus 2' where objectively actions do not have logical ends and purposes while subjectively they do. Such a case might be described as one in which an objective probability distribution does not exist, while agents attempt to form a subjective distribution. These would be cases in which the fallacy of composition applies.
formation in conditions in which the degree of rational belief in propositions is less than certain. It is clear from Chapter 12 of the General Theory that the investment decision is the most important application of such a theory. It is indeed unfortunate that commentators who have not bothered to follow Keynes' explicit references to his work on probability consider this chapter as exhibiting the heights of his journalistic style and being devoid of theoretical content rather than representing an attempt to simplify a complex argument concerning the basis of human knowledge!

In this economic application of his theory Keynes appears to adopt the view that while it is in most cases possible, indeed necessary, to express the probabilities asserted by secondary propositions concerning any investment decision, these probabilities will not in general be comparable because the facts of experience which enter $h$ for the various primary propositions differ or may not exist: 'Our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible. If we speak frankly, we have to admit that our basis of knowledge for estimating the yield ten years hence of an investment] amounts to little and sometimes to nothing' (1936, pp. 149–150).

Where there is no direct knowledge, $h$ is empty, and Keynes suggests that rational behaviour will in fact be based on conventional behaviour – by reference to average opinion. For the more general, but formally identical case, where $h$ is not empty, but the resulting probabilities of competing secondary propositions cannot be compared, Keynes suggests that a second aspect of probability, the 'weight of the argument,' will become dominant. (Cf. Hoogduin, 1987, p. 57, if., who puts this view in contrast to Lawson.) As Keynes put it, 'It seems that there may be another respect in which some kind of quantitative comparison between arguments is possible. This comparison turns upon a balance, not between the favourable and the unfavourable evidence, but between the absolute amounts of relevant knowledge and of relevant ignorance respectively. ... As the relevant evidence at our disposal increases, the magnitude of the probability of the argument may either decrease or increase, according as the new knowledge strengthens the unfavourable or the favourable evidence; but something seems to have increased in either case, -- we have a more substantial base upon which to rest our conclusion. I express this by saying that an accession of new evidence increases the weight of the argument' (1921, p. 77). It is precisely to the weight of the argument that Keynes refers when he discusses the role of confidence in the investment decision: 'The state of long term expectation, upon which our decisions are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the confidence with which we make this forecast ... The state of confidence ... is a matter to which practical men always pay the closest and most anxious attention. But economists have not analysed it carefully ... The state of confidence is relevant because it is one of the major factors determining [the schedule of the marginal efficiency of capital], which is the same thing as the invest-
ment demand schedule' (1936, pp. 148–149). Thus when it is impossible to give expression to rational belief, it is the weight of the argument which becomes the dominant factor which allows alternative investment decisions to be assessed and decisions taken. Here the subjectivity of individual differences may become dominant, for an individual’s experience will determine the weight to be attached to new evidence.

It seems that this is the point at which animal spirits come into play in the General Theory, in deciding when the weight of the argument of a proposition is sufficient to make it prevail over all other propositions, by the ‘spontaneous urge to action rather than inaction’ which makes it seem irrelevant to gather additional information to increase the weight of the argument and thus the state of confidence.

After outlining both the role of convention and spontaneous urge in the investment decision, Keynes goes on to assure the reader he ‘should not conclude from this that everything depends on waves of irrational psychology’ for, as argued above, these decisions are decidedly based on “rational spirits”: ‘our rational selves choosing between the alternative as best we are able, calculating where we can, but often falling back for our motive or whim or sentiment or chance’ (1936, pp. 162–163).

Given the importance of the ‘state of expectation’ in determining the level of investment it should be stressed that in contrast to traditional probability theory, additional evidence will produce a new secondary proposition (because it changes h) which may assert either a higher or lower probability, and which may or may not be comparable with the probability of the initial proposition, but which will have a greater weight and thus provide a better means of decision. Postponing a decision in order to acquire more information thus need not increase the probability, but it will increase the confidence in the probability asserted by a proposition and thus increase the basis for making a decision. In the case of statistical probability there is always a sufficient amount of information available to produce a certain basis for decision-making, one has simply to wait for the passage of time to produce more observations or be willing to pay the cost of gathering the additional information. On Keynes’ view, however, even if the information exists it may not enable the individual to take a decision because he cannot evaluate it or has no basis for comparing it. The only course which is then open is to increase the weight of the argument. But unlike the logical probability, the weight of the argument has no limits such as certainty or impossibility. When is the weight of the argument sufficient to lead to a decision to act on its basis? To this question Keynes provides no answer, and suggests that there is none for it is not possible to balance the cost of additional information against increased weight as it is possible to balance the cost of additional information against increased certainty in the traditional approach.

Whether the post Keynesian theories are ‘rational’ or ‘irrational’ depends then not so much on the definition of the term ‘rational’ as on the definition
of the process which governs the events about which we must form expectations. If it is an ergodic stochastic process then animal spirits are not only not rational, they are unnecessary; if it is non-ergodic then the failure to use 'rational spirits' is not only irrational, but the use of statistical probability would in most cases produce consistently erroneous predictions. Or, in Shackle's view: 'if choice is originaative, it can give a thrust to the course of things intended to secure its ends. In order to secure its ends, choice must apply a knowledge of what will be the consequence of what. But the sequel of an action chosen by one man will be shaped by circumstances, and its circumstances will include the actions chosen now and actions to be chosen in time to come by other men. If, therefore, choice is effective, it is unpredictable and thus defeats, in some degree, the power of choice itself to secure exact ends' (1974, p. 1). Thus, if each individual's decisions can change the course of events and they cannot be predicted, the information required in h will not exist when it is required to make a probability calculation. Yet, this does not mean that probabilities will not be calculated or that there is no basis for rational belief capable of leading to decision and choice.

This view of uncertainty and 'rational spirits' provides an explanation of why Keynes chose to present his theory, not by starting with a theory of perfect certainty, and then attempting to introduce aspects of uncertainty, but rather by accepting the ubiquitous nature of uncertainty, formulating this theory in terms of a constant state of long term expectations and then introducing shifting expectations (cf. Kregel, 1976). At any point of time entrepreneurs will have attached probabilities to a series of investment propositions and each will also have a weight of the argument expressed as the state of confidence. A different state of confidence, implying a different state of long term expectation will thus give a different combination of investment decisions and a different position to the marginal efficiency of capital curve. In order to trace out the implications of a given level of investment, it was thus necessary to assume a given state of confidence in order to keep the weight of the argument from changing and producing a varying set of investment decisions. This given state of expectations may be expressed as the assumption that for every investment decision taking place, the weight of the argument is just sufficient to produce a decision to undertake the investment under consideration at a point in time.

But how does all this fit in with microfoundations? The answer is to be found in why the information required for certain propositions is not available, in why the system is non-ergodic. The simplest answer, as suggested in the quotation from Shackle given above, is because the events that have to be predicted in economic analysis are not parts of the objective physical universe, but are the results of decisions of other individuals which are currently being taken and which will be taken in future. Now, if we could assume that all individuals were identical both in respect to their physical make-up and their experience we could expect that in similar circumstances they would formulate similar propositions, i.e. we could predict p/h, and on the basis of Keynes' theory of proba-
bility predict the probability that would be assigned and the associated weight of the argument, thereby predicting their 'rational' decision. But, as Shackle has taken great pains to point out in criticism of Keynes' theory, this objectivity is illusory because individuals are not the same. Each will have a different background and experience, will produce different propositions and have different evaluations of evidence. As Adam Smith long ago pointed out in his Theory of Moral Sentiments, this is private information which cannot be transmitted and therefore cannot be known. At best it can be imagined. The information which determines the outcome of economic propositions, as Shackle would say, is invented in the very process of making a decision. It is for this reason that waiting for additional information does not increase the degree of rational belief since it provides a new set of decisions and new propositions. As Keynes himself put the point: 'The pseudo-analogy with the physical sciences leads directly counter to the habit of mind which is most important for an economist proper to acquire. I also want to emphasize strongly the point about economics as a moral science. ... it deals with introspection and with values. I might have added that it deals with motives, expectations, psychological uncertainties. ... It is as though the fall of the apple to the ground depended on the apple's motives, on whether it is worth while falling to the ground, and whether the ground wanted the apple to fall, and on mistaken calculations on the part of the apple as to how far it was from the centre of the earth' (1973, p. 300).

The 'non-ergodicity' of the system then ultimately results from the fact that individual actions are constrained by the actions of other individuals which cannot be predicted with certainty and thus when taken together form an aggregate or global or macroeconomic constraint which is not the simple, linear, and therefore predictable summation of individual behaviour. Thus it is not macroeconomics that has to be brought into closer touch with microeconomics, but rather one must try to formulate a macrofoundation for uncertain individual decisions.

3 RATIONAL SPIRITS, MONEY AND THE THEORY OF VALUE

This macrofoundation can only be found in the role of money in the economic system. In his much read, but little understood 1937 Quarterly Journal of Economics article, Keynes repeats his 'philosophical disquisition on the behaviour of mankind,' and concludes that the first implication to be drawn is the 'treatment of money and interest.' (Keynes, 1937, in 1973 p. 115). After noting that in conditions of certainty there is no possible explanation, for 'anyone outside a lunatic asylum,' to hold money as a store of value, Keynes goes on to note that in reality, 'our desire to hold money as a store of wealth is a barometer of the degree of our distrust of our own calculations and conventions concern-

3 A fuller discussion of the problems of price determination can be found in Kregel (1984).
ing the future. ... The possession of actual money hurls our disquietude; and the premium which we require to make us part with money is the measure of the degree of our disquietude' (ibid., p. 116). This premium, the liquidity premium, is the rate of interest, determined by what Keynes dubs liquidity preference. Here one might be tempted to instantly draw an inverse relation between the state of confidence and the degree of liquidity preference, thereby linking the decision to hold money directly to the analysis of decision-making given above.

Keynes goes on to emphasise that it is not the quantity of money which will influence prices, but rather 'fluctuations in the degree of confidence,' which 'are capable of having quite a different effect, namely, in modifying not the amount that is actually hoarded, but the amount of the premium which has to be offered to induce people not to hoard. ... changes in the propensity to hoard, or in the state of liquidity preference as I have called it, primarily affect, not prices, but the rate of interest.' It is the role of the rate of interest to determine 'the price of capital assets,' for the owner of wealth has two alternatives, he may invest or remain liquid. In equilibrium these alternatives must offer equal advantage which 'is brought about by shifts in the money prices of capital assets relative to the prices of money loans. The prices of capital assets move until, having regard to their prospective yields and account being taken of all those elements of doubt and uncertainty, interested and disinterested advice, fashion, convention and what else you will which affect the mind of the investor, they offer an equal apparent advantage to the marginal investor who is wavering between one kind of investment and another' (ibid., 116–117). It is on the basis of these prices relative to the cost of newly produced assets that decisions are taken to produce new capital goods, i.e. the level of investment which via the multiplier produces the level of aggregate income (cf. Kregel, 1987).

As Townshend (1937) was quick to point out, Keynes' explanation of the role of prices in equating the advantages of holding money and other durables is an implicit criticism of traditional microeconomic theory: 'It would seem therefore, not to be the case that competition (even if perfect) would secure, even in the long run, an equality between selling-price and money-cost in new production at the margin...' ... 'Prices – even relative prices – are therefore not to be regarded as wholly causally determined by supply and demand at the margin of production' (ibid., pp. 165, 168) but will rather be such to bring the prices of newly produced and existing assets into equality. This equality may be associated with either an excess or a deficiency of price and cost of production at the margin of production. 'Moreover, the compensating factors of supply and demand in new production never catch up with the continuous spontaneous variations in the liquidity-premiums attaching to the existing stocks. For production takes time; ... its effects on prices will not in general neutralise the instantaneous effects of the variations in the psychological preferences attaching to existing stocks' (ibid., p. 168).

This point of view provides a new insight into the problem which first initiat-
ed the entire microfoundations debate: Keynes' claim to have derived a theory of unemployment equilibrium. Such a claim implied that it was possible to have equilibrium while one market was in disequilibrium in the sense that there was an excess supply of labour at the ruling real wage rate and this was in conflict with the general equilibrium configuration of traditional microeconomics. At the very least, the existence of excess supply in one market should be balanced by excess demand in some other market. Unemployment could thus still be explained by a disruption in the process of flexible price adjustment in either the labour or goods market.

But, Keynes' theory of nominal prices suggests that equilibrium should be identified not by equality of supply and demand as represented by cost of production equal to price, but rather by the equality of rates of return on all existing durable assets. If it is the spot prices of newly produced and existing assets which are equal in equilibrium then it will generally be the case that spot prices will not equal forward or supply prices representing the costs of producing new future supplies. This means that as new supplies come onto the market through new production, supply will diverge from demand and the spot prices of existing and newly produced assets will have to be brought into equality.

As Stolper first pointed out in his 1932 review of Hayek 'in equilibrium spot and forward prices coincide' but, 'if, for any reason, the supply and demand for a commodity are not in equilibrium (i.e. its market price exceeds or falls short of its cost of production), its spot and forward prices diverge' (1932, p. 50). In Chapter 17 of the General Theory Keynes elaborated on this conception and proposed that at every point in time, equilibrium in a monetary economy, given the state of confidence, would be characterised by the equality of spot prices for all existing and newly produced goods. It was then also possible to speak of a long-period stationary equilibrium for the economy in which the spot and forward prices of all durables had been brought into equality so that their rates of return in money were all equal (and prices equaled costs of production). The question then was posed was the level of investment and the rates of return at which this state would occur.

It is in answering this question that the nexus of uncertainty, money and prices intersects, for Keynes argues that it is the liquidity premium as given by the state of confidence which sets the limit which the rates of return of all other durable assets must achieve. But since it is a rate which is determined by the 'rational spirits' of entrepreneurs it will be a psychological, or better, a conventional, variable influenced by factors independent of the level of output which

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4 It is thus possible to explain why prices will in general diverge from long-period costs of production without having to rely directly on arguments concerning the impact of the degree of competition on prices and employment (which Keynes always resisted) or the necessity for descriptive realism of the model; it is also obvious that this is an additional element in the explanation of the divergence between prices and costs that has been the main objective of the post Keynesian microeconomic theories based on mark-up pricing cited above p. 520.
primarily affect costs of production and thus the supply prices of other durables. It is in this sense that liquidity preference sets the equilibrium relative money prices at which the prices of existing assets and newly produced assets are brought into equality. It is thus not an imperfection in the operation of the flexible price mechanism in determining prices which is at the basis of Keynes' unemployment equilibrium, it is rather the imperfection of agents' knowledge causing uncertainty over the propositions determining the return of investment projects. Neither is the absence of a sufficient microfoundaton the cause of the macroeconomic result of unemployment equilibrium; it is rather due to a difference in the specification of equilibrium prices in terms of both spot and forward prices and the determination of one crucial price, the rate of interest, by conventional factors because of the existence of uncertain knowledge.

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**Summary**

**RATIONAL SPIRITS AND THE POST KEYNESIAN MACROTHEORY OF MICROECONOMICS**

The argument that post Keynesian theory rejects rationality and maximization as a basis of agent behaviour and is thus non-rational and lacking micro-foundations is contrasted by reference to Keynes' use of his early work on probability in the *General Theory.* Instead of presuming rational choice over perfectly known events, post Keynesian theory builds on Keynes' explanation of agents' 'rational' beliefs in uncertain propositions about their knowledge of the world. These 'rational spirits' lead to the recognition of the macro constraints to individual action or a macrofoundations of microeconomics linked to the role of money and to the role of liquidity preference as both a measure of rational belief and a determinant of money prices which equate the rates of return on all existing and newly produced goods. In this equilibrium prices will generally diverge from costs of production, in contrast to perfect competition but in concordance with the post Keynesian microeconomic theories of mark-up pricing.
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