5 Profit maximization in the Cambridge tradition of economics

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Introduction

Since the 1960s, the 'Cambridge' approach has been increasingly identified with the anti-marginalist stance, be it of a Sraffian or a Kaleckian lineage. We produce evidence, however, that at least until the 1950s, consensus among the leading Cambridge economists hardly existed on this matter. Keynes and Kahn never rejected Marshall's language when dealing with price and output determination by the single firm. They, and Joan Robinson, were highly critical of the concept of degree of monopoly, employed by Kalecki who, on his part, while rejecting the Marginal Revenue = Marginal Cost approach, was unsympathetic to full-cost pricing, at least in the form suggested by Hall and Hitch (1939).

Unlike Sraff's case, the critique that Keynes, Kahn and Joan Robinson raised against the neoclassical paradigm and the supposed optimality of the system went together with the apparently unquestioned acceptance by them - at least at a disaggregate level - of marginal analysis, supply and demand theory, and the related concept of equilibrium. On the other hand, these economists never endorsed that theory in the case of investment decisions and money market operations, because of the role they attributed to uncertainty and the importance they all gave to the unpredictable consequences, at the aggregate level, of individuals' intertemporal choices.

In what follows, we examine the positions taken by Marshall, Kahn, and Keynes on marginal cost pricing and profit maximization, and the criticisms put forth by Kalecki and the Cambridge Keynesians against the Hall and Hitch version of full-cost pricing. Although Marshall and Kahn were more concerned with the equilibrium of the individual firm or industry, while Keynes and Kalecki were addressing these issues in the context of the system as a whole, we compare their approaches to entrepreneurial behaviour - as summarized in the assumption of profit maximization - to clarify the reasons underlying the acceptance or rejection of that assumption.

In order to avoid confusion, some clarifications are needed. In the title, and throughout the chapter, we make reference to a not clearly specified Cambridge tradition and the reader may wonder why these particular authors have been selected. We give two reasons: the first, less controversial, is that they are leading economists within the Cambridge approach; the second is that they seem, at least on the surface, hesitant to endorse the marginal method in their analysis. Indeed, if we were to address the question of what is the Cambridge tradition, as far as the theory of business behaviour is concerned, our attention should be directed rather to those authors such as Macgregor, Lavignino, Robertson, and Andrews or those parts of Marshall's works, such as Industry and Trade (1919), which deal extensively with these issues and stand out as the Cambridge approach to industrial economics (Raffaelli, 2004). However, as we hope to make clearer below, this is not the purpose of the present chapter, which explains also why we do not pursue our inquiry into those aspects of Marshall's approach which point to directions other than the static marginal analysis of the entrepreneur's behaviour. On the contrary, it is our purpose to address the question of whether, and to what extent, the profit maximization rule was adopted by authors who are taken as reference points in the search for an alternative to mainstream economics. It should also be made clear that our aim is not to set up an agenda for the task of reconstituting a Cambridge (or Post Keynesian) approach to business behaviour, but rather to delineate as precisely as possible the positions held by those authors, in what is mainly an exercise in the history of economic thought. In this respect, we do not even attempt to address the question of how entrepreneurs behave in the real world, although we hold the view that profit maximization and marginal calculus are neither a convincing nor a logically tight representation.

Marshall

Marshall is the starting point of our investigation, since he was extremely influential in the development of many lines of research within the Cambridge tradition in economics that were pursued by his followers and critics alike. In the recent literature, the view has emerged that the evolutionary approach, as can be found in Industry and Trade and in some parts of the Principles, is the essential element of Marshall's theory of the individual firm and industry, in general. It is claimed that the standard interpretation - the static analysis of various types of cost, the supply and demand apparatus, as presented in Book V, Chapter VI, of the Principles - is misleading and gives a false image of what Marshall was trying to do (Dardi, 2003; Raffaelli, 2003).

Even in the light of these recent interpretations, what seems difficult to deny is the presence in Marshall's analysis - beyond an evolutionary/biological approach - of a static vision of the firm, in which the entrepreneur is seen as a maximizing agent whose behaviour is analyzed in terms of the marginal method. See, for instance, the following passage:

Every business man [...] estimates as best he can how much net product (i.e. net addition to the value of his total product) will be caused by a certain extra use of any one agent; [...] He endeavours to employ each agent up to
that margin at which its net product would no longer exceed the price he
would have to pay for it. He works generally by trained instinct rather than
formal calculation; but his processes are substantially similar to those indi-
cated in our study of derived demand; and, from another point of view, they
may be described as those which might be reaped by a complex and refined
system of book-keeping by double entry.

(Marshall, 1920, p. 406)

Even though a context of imperfect knowledge seems to be implicit here, the
marginal method as comparison between two magnitudes at the margin is
adopted by Marshall as the rule of behaviour guiding the entrepreneur in his
decisions.

On the other hand, Marshall's analysis of the decision process of the entre-
preneur in the Introduction of the Principles, as well as in Industry and Trade,
appears rather different. A much greater importance in the study of businessmen
behaviour is given to the influence of habits and customs, to the institutional
context and to business 'connections' (see, for example, Marshall, 1919, p. 196),
meaning an extended knowledge of the market in which the business man is
operating, in all its technical and interpersonal aspects (see Becattini, 1962;
Caldari, 2001). The entrepreneur is the 'undertaker', that is the person bearing
the risk embodied in business activity, and possessing special qualities like
'knowledge of things in his own trade', 'power of forecasting the broad move-
ments of production and consumption' (which includes the capacity to see
'where there is an opportunity for supplying a new commodity that will meet a
real want or improving the plan of producing an old commodity'), the ability 'to
judge cautiously and undertake risks boldly' and to be 'a natural leader of men'

In describing the general characteristics of men's (including businessmen's)
actions, Marshall wrote:

[...] the side of life with which economics is especially concerned is that in
which man's conduct is most deliberate, and in which he most often reckons
up the advantages and disadvantages of any particular action before he
enters on it. And further it is that side of his life in which, when he does
follow habit and custom, and proceeds for the moment without calculation,
the habits and customs themselves are most nearly sure to have arisen from
a close and careful watching the advantages and disadvantages of different
courses of conduct.

(Marshall, 1920, pp. 20–21)

In other words, when describing the entrepreneur's behaviour in the real world
the marginal rule becomes a matter of balancing the 'advantages' against
'disadvantages' of a change in a given situation or action, rather than equalization
of two exact magnitudes, such as Marginal Revenue ('net product' in Mar-
shall's terminology) and Marginal Cost, as is the case in the determination of the

equilibrium of the firm. And it is just this sound representation of the business-
man's decision process which fits well with Marshall's biological and evolution-
ary conception of the firm and the economic system as a whole, as the result of
processes of repetition and variation, differentiation and integration (Raffaelli,
2003, p. 104).

In the Cambridge tradition, we can easily find traces of both representa-
tions of the firm and business behaviour. The evolutionary approach perme-
ated the industrial economics as developed by those pupils of Marshall who
felt closer to the 'spirit' of the Master, such as Lavington, Macgregor, Shove,
Robertson and later Andrews (Raffaelli, 2003). In contrast, the static par-
digm of the firm in conditions of perfect competition, imbued with supply and
demand curves and marginal calculus by entrepreneurs, was enlarged and
refined by Pigou and, strangely enough, also by Kahn and Robinson. The
theory of imperfect competition sprung up as a reaction to Sraffa's attack on
the Marshallian theory on the ground of its lack of consistency and realism
(see Sraffa, 1925, 1926). In the work done first by Richard Kahn and then
Joan Robinson, however, imperfect competition became a means to supple-
ment the Marshallian approach rather than a reason to discard it. Perfect
competition was shown to be a special case, when supply and demand curves
have a particular shape, but the whole marginalist apparatus, embodied in the
average and marginal curves and the profit-maximization rule, was fully
endorsed (Marcuzzo, 2003).

Kahn

In this section we look first at Kahn's attempts to generalize the Marshallian
analysis to cases other than pure competition and, then, at his peculiar interpre-
tation of profit maximization. In his Economics of the Short Period, which is the
title of both Kahn's Fellowship Dissertation (Kahn, 1989) and an unfinished
book (Kahn, 1932a), he makes the fundamental point that profit maximization is
the general rule for determining the equilibrium level of output, under the
assumption of perfect and imperfect competition alike.

In an article called the 'Imperfect Competition and the Marginal Principle'
(Kahn, 1932b), which also remained unpublished during his lifetime, Kahn
addresses more closely the issue of whether the adherence to the rule is borne
out by the observation of actual behaviour of firms. The accordance between
theory and reality is reached by interpreting profit maximization rule as synon-
ymous with a method of 'trial and error' rather than a calculus exercise actually
and consciously undertaken by businessmen. In the Dissertation he wrote:

[...] Instincts and intuitions will secure adherence to marginal principle in
action when conscious apprehension is impossible. And, failing those, we
may rely on the method of trial and error; experience, embodied in rule of
thumb, will often indicate how profits may be maximised.

(Kahn, 1989, p. 162)
In the article he presented the same argument:

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\text{[...] we can suppose that every producer is, quite independently of the other producers, constantly oscillating his price and output in an attempt to hit off the point of maximum profit. For it is only by relying on the persistent adoption by business men of this method of trial and error that the ordinary assumptions of economic theory can really be justified.}
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(Kahn, 1932b, p. 5)

Kahn himself listed the objections which can be raised against his argument. First, how to account for the evidence that businessmen usually claim to look at average rather than marginal cost. His answer was that:

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\text{[...] it is the consequences of business men's individual acts, not of their general theories, with which we have to reckon. And a general theory that appears to them to be completely obvious may fail altogether to gain expression through their individual acts.}
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(Kahn, 1989, p. 159)

The point here is that, according to Kahn, businessmen do not behave as they claim they do, and this is why what they say can be disregarded. Moreover, the proof that actual behaviour indeed follows the marginal rule is 'success' in business.

Second, the demand curve is hardly known by the individual firm. How can it be supposed that it forms the basis for the search of the point of intersection with the marginal cost curve? Kahn claims that what matters is 'the business man's conception of his individual demand curve' arrived at by 'the method of trial and error'; thus the only relevant assumptions are those 'that are in the mind of the business man when he maximizes his profit' (Kahn, 1989, p. 101). In fact, to understand businessman's behaviour what is relevant 'is not what actually happens when a firm alters its price, but what the owner of the firm imagines is likely to happen' (Kahn, 1989, p. 100, emphasis added).

Notwithstanding the subjective element embodied in any demand schedule (and in any marginal cost schedule as well), according to Kahn it is possible to employ the demand curve to find the profit maximizing level of output (under perfect competition) and the profit maximizing level of price (under imperfect competition) on the basis of the following argument:

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\text{[It is] possible to make use of the individual demand curves without presupposing the nature of the assumptions upon which business men act. The nature of these assumptions affects the slope of the individual demand curves and consequently it affects the position of final equilibrium; but it does not affect the general argument by means of which the position of equilibrium can be determined.}
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(Kahn, 1989, p. 119)

Moreover, 'any a business man would rather lose more in order to appear to lose less' (Kahn, 1989, p. 17).

The point here is that rational behaviour, as implied in the application of the marginal rule when output is to be reduced, is not followed by entrepreneurs either because they hold on to ill-founded expectations of recovery, or for fear of appearing unsuccessful. The consequence of not minimizing losses is, however, bankruptcy and/or the closing down of the firm; if firms survive this is proof that the rule was followed.

Kahn's position, as it emerged in his 1930s work, was made popular by Machlup (1946) - with no reference to Kahn, of course, whose views on these matters remained unknown outside the circle of few people in Cambridge - in his famous article 'Marginal Analysis and Empirical Research', where he stressed that:

1. Trial and error rather than a strict calculus is the assumed pricing method: 'The business man who equates marginal net revenue productivity and marginal factor cost when he decides how many to employ need not engage in higher mathematics, geometry, or clairvoyance [...] he would simply rely on his sense or his "feel" of the situation' (Machlup, 1946, p. 535).

2. Demand and cost curves are subjective estimates: 'Marginal cost and marginal revenue concepts [...] refer to expectation of future condition' (Machlup, 1946, p. 523) and 'marginal analysis of the firm should not be understood to imply anything but subjective estimates, guesses and hunches [of price, output and sales]' (Machlup, 1946, p. 522).

3. It is not with businessmen's rationalization of their actions but with their actual behaviour that marginal analysis is concerned: 'The technical terms used in the explanation of an action need not have any part in the thinking of the acting individual' (Machlup, 1946, p. 537).
**Keynes**

The *piede de résistance* of the Cambridge critique against neoclassical theory is Keynes’s *General Theory* (1936) where, nevertheless, we find the assumption of rising marginal costs, and the implied inverse relationship between employment and real wage, which are evidences that not all ties with the Marshallian apparatus were severed.

However, the passages in the *General Theory* devoted to the analysis of the equilibrium of a single firm in terms of profit maximization are very few and the same applies to the preparatory work. The most explicit reference is taken from one of the drafts of Chapter 3.  

Each firm calculates the prospective selling price of its output and its variable costs in respect of output on various possible scales of production. Its variable cost per unit is not, as a rule, constant for all volumes of output but increases as output increases. Output is then pushed to the point at which the prospective selling price no longer exceeds the marginal variable cost.

(Keynes, 1979, p. 98; see also p. 89)

The passage, perhaps significantly, was not included in the final version, but there is no textual evidence in the *General Theory* which could authorize the reader to think that Keynes substantially changed his mind on this particular matter. On the other hand, it is worth noticing here that there is no a specific part of his widespread scientific production which is explicitly devoted to a comprehensive analysis of this issue: he seems not to have dedicated too much effort and time to go deeper into this aspect of economic theory.

In the *General Theory* the relevant passages are: ‘The entrepreneur’s income [...] is taken as being equal to the quantity, depending on his scale of production, which he endeavours to maximise, i.e. to his gross profit in the ordinary sense of this term; – which agrees with common sense’ (Keynes, 1936, pp. 53–54; see also p. 56); and ‘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’ (Keynes, 1936, pp. 24–25).

It seems evident that Keynes adopted the marginal language and employed it quite sparingly, as if – one is tempted to infer – it were outside the core of his analysis. Reliance on the Marshallian apparatus – demand and supply curves – is, in fact, limited in the *General Theory*, whose main message is its being other than the ‘classical’ theory. Keynes’s criticism of the latter consisted in pointing out that its tacit assumptions are seldom or never satisfied, with the result that it cannot solve the economic problems of the actual world’ (Keynes, 1936, p. 378).

We may perhaps infer, a contrario, that the assumptions behind profit maximization appeared to Keynes to be sufficiently explicit and general to make them acceptable. Here we can measure the distance from Sraffan who, in the same years, was starting to attack marginal analysis at its foundations, evidently never managing fully to persuade Keynes of the necessity to discard the neoclassical citadel on this ground (see Marcuzzo and Rosselli, 2006).  

On the other hand, Keynes’s path-breaking views mainly concern investment decisions, the determination of its prospective yields, the influence of expectation and uncertainty in economic calculation, and the role of speculative activity. As a consequence, entrepreneurs are seen not to be proceeding on the base of a rational calculus, but as conforming to instincts, conventions and habits (Keynes, 1936, p. 152). In the *General Theory*, indeed, investment decisions, as opposed to the determination of the level of individual output, are never made on ‘a precise calculation of prospective profit’: they are the outcome of a sort of lottery in which

[... even after the event no one would know whether the average results in terms of the sums invested had exceeded, equalled or fallen short of the prevailing rate of interest [...]. If human nature felt no temptation to take a chance, no satisfaction (profit apart) in constructing a factory, a railway, a mine or a farm, there might not be much investment merely as a result of cold calculation.]

(Keynes, 1936, p. 150)

Moreover, in Keynes, as noted by Roncaglia (2006), ‘there is a distinction of economic agents and decisions according to the “kind” of uncertainty involved: entrepreneurs have to be kept distinct from financiers, and both from households; among entrepreneur’s decisions, those concerning investments have to be kept separate from those concerning production levels’.  

In the face of ‘fundamental’ uncertainty, a way out for the entrepreneurs is to follow some conventional rules, as for example ‘to take the existing situation and to project it into the future, modified only to the extent that we have more or less definitive reasons for expecting a change’ (Keynes, 1936, p. 148). Another is to try to guess the prospective yields on the basis of a rational conjecture, taking into account the degree of ignorance on the causes influencing the results, through a proceeding similar to trial and error.

Keynes writes in a famous passage of the *General Theory*:

Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits – of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities.

(Keynes, 1936, p. 161)

This passage seems to us to be clear evidence of his rejection of mathematical calculus to represent what is behind entrepreneurs’ actions, rather than a belief in the ‘irrational’ nature of the entrepreneur’s decision process (see also Keynes, 1936, pp. 162–163).

The relevant distinction here is between the set of elements which are taken
into consideration by individuals to make a decision and the set of elements into which they can be transformed in order to build an economic theory. Unlike the example of the motorcyclist who finds the optimum angle of inclination in making a turn, without any calculation, but as if he had full knowledge of the laws of kinetics, Keynes’s description of entrepreneur behaviour shows that it is misleading to interpret MR = MC as an approximate rule of behaviour, because other elements enter in the decision-making process, which are missed out in translating ‘instinct’ into ‘calculus’.

Kalecki

The peculiarity of Kalecki’s approach is that when working with imperfect competition he did not rely on the profit maximization assumption. This was perceived as an anomaly by Joan Robinson, who, in one of her first letters to Kalecki, in relation to his article ‘A Theory of the Business Cycle’ (Kalecki, 1936), which she received in draft form,14 commented: ‘Keynes’s system, as you say, is unrealistic, but yours it is troublesome because marginal prime cost as you define it is not equal to marginal revenue, or is only equal to it if entrepreneurs are very foolish’ (Robinson to Kalecki, 16 September 1936, in Kalecki, 1990, p. 502).

In that article Kalecki (1936, pp. 529–534) constructs a marginal labour cost curve (MLC) and a marginal value added curve (MVA), both derived by subtracting respectively from the prime costs curve and the marginal revenue curve (supposed to be decreasing) the cost of raw materials. The curves are first derived for the individual firm and then aggregated for the system as a whole, in the determination of the short-period equilibrium level of output. The position of the marginal labour cost curve is fixed by assumption in the short period, since capital equipment is fixed. But the position of the marginal value added curve depends on the level of the capitalists’ expenditure, on the basis of the well-known Kaleckian assumption according to which only capitalists save and can change their level of expenditure. Thus, the marginal value added curve moves until the short-period equilibrium is reached.

It is not clear whether Robinson is objecting to an equilibrium defined at the point of intersection between the MVA curve and MLC curve, or to a lack of a specific assumption on entrepreneur’s behaviour when choosing the level of the firm’s output. However, she seems to imply that she was not ready to follow Kalecki in his abandonment of the profit maximization rule.

The development of Kalecki’s ideas follows his involvement in Sraffa’s seminar15 in Cambridge and his research activity in 1938–39.16 In the Autumn of 1938 the Cambridge Research Scheme of the National Institute of Economic and Social Research into Prime Costs, Proceeds and Output was set up, under the supervision of a committee consisting of Austin Robinson, Kahn, Kalecki and Sraffa, with Keynes as Chairman. At the end of the first year Kalecki presented the principal results of the research in the form of individual reports on the single industries and a general report (for further details see Marcuzzo, 2005).

In his Interim Summary of Results (Summer, 1939), Kalecki synthesized the nature of that inquiry. The ratio of aggregate proceeds to aggregate prime costs (i.e. raw material bill plus wage bill) and the corresponding indices of the volume of output were calculated for six industries. The ‘degree of monopoly’ was brought in to explain the variation of prices, together with the relative share of wages in the value of net output and raw materials prices (Kahn papers, King’s College, RFK 5/1/83). These reports came under heavy fire from Keynes, Kahn and Joan Robinson,17 who objected to the methodology employed.

Soon afterwards Kalecki resigned from the Cambridge post and set himself to ‘writing a theoretical interpretation of the results’ (letter from Kalecki to Kahn, 9 June 1939, in RFK 5/1/147), which he did in his article on the Supply Curve (Kalecki, 1940). In that article he was still retaining some sort of marginal analysis, but he was moving away from it, as it is clearly accomplished in his Studies in Economic Dynamics (Kalecki, 1943). In this work two new assumptions were adopted: a) ‘the average prime cost changes little as output expands’; b) ‘the entrepreneur takes the average prime costs [which usually varies little as output expands] as a crude approximation of the marginal costs. The latter seems to be borne out by recent enquiries, which showed that entrepreneurs are really not familiar with the exact concept of marginal cost’ (Kalecki, 1943, p. 119). The relevant point here is that since average costs are assumed to be almost constant, marginal costs are also constant, and thus they lose their importance in determining the level of output. Moreover, average cost is easier to be conceived of and this is why entrepreneurs rely on it rather than on marginal cost. Kalecki, unlike Kahn, is more willing to accept as reliable what entrepreneurs say they are doing, although he was as critical as Kahn was towards Hall and Hitch, as we shall see below.

For much of his late 1930s analysis, Kalecki seems to have followed the line of thought which held that, as long as a market is imperfectly competitive – that is, each firm faces a downward-sloping demand curve – marginal cost can be retained as basis for price and output determination. He appears to have moved towards the acceptance of average cost pricing only in the early 1940s.

Kalecki’s theory in fact moved in the direction of mark-up pricing18 in a context of oligopoly with the particular hypothesis of a pro-cyclical movement of the elasticity of demand (Kalecki, 1991, p. 496). It is only in the Theory of Economic Dynamics (1954) however, that Kalecki takes an explicit stance against profit maximization: ‘in view of the uncertainties faced in the process of price-fixing, it will not be assumed that the firm attempts to maximize its profits in any precise sort of manner’ (Kalecki, 1954, p. 210). The crucial switch point in the development of Kalecki’s thinking was the adoption of oligopoly rather than static imperfect competition into his framework of analysis. Strategic behaviour involves limited and bounded rationality where the simplicity of profit maximization behaviour is no longer a viable hypothesis.

Interestingly enough, Kahn, unlike Kalecki, remained faithful to the profit maximization approach, also in the cases of duopoly and a kinked demand curve. He wrote: ‘[The kinked demand curve] is compatible with the traditional
hypothesis of profit maximization [...] all that the kinked demand curve explains is why the price remains where it is (for no other reason than that it happens to be there) until something happens to cause it to alter' (Kahn, 1952, p. 122).

**Cambridge criticism of ‘full cost’ pricing**

Reliance on average cost rather than marginal cost in setting prices is indeed what is done in the so-called ‘full-cost’ principle and this explains why this approach is favoured in the Post Keynesian tradition. However, criticism of ‘full cost pricing’ – at least in the version of Hall and Hitch (1939) – was put forward both by Kahn and Kalecki, disproving the common belief in a full endorsement of it within the Cambridge tradition.

Hall and Hitch presented the results of an inquiry into firms’ behaviour in setting prices, based on a questionnaire submitted to 38 entrepreneurs. The main findings were that entrepreneurs aimed to cover their average costs, to which they added a fixed percentage margin, rather than trying to maximizing their profit by equating marginal revenue to marginal costs (Besomi, 1998). This approach became known as the ‘full cost principle’. The criticisms raised against it by Kahn can be summarized as follows.

1. It has a slender factual basis. After noting that Hall and Hitch’s study was based on only 38 interviews, Kahn examined each of them and concluded that only eight responses, in fact, confirmed the above principle. He then concludes: 'The one quite certain conclusion to which the Hall–Hitch article drives the reader is that far too elaborate a theoretical edifice has, in the twelve years which have elapsed since its publication, been built on a very slender factual basis’ (Kahn, 1952, p. 121).

2. It is not a general principle for setting prices, but is rather a mechanism to which firms turn when trade is slack and excess capacity occurs: ‘as a self-defence mechanism, protecting business men against the disastrous effects on profits produced by the existence of surplus capacity in an industry which is fairly competitive and homogeneous’ (Kahn, 1952, p. 123). When the demand is falling, the profit maximization rule (or the loss minimization rule) would require a reduction of the quantity produced, to which corresponds – given increasing marginal costs – a reduction of profit per unit of product, but which guarantees at the same time a minimization of the negative effects due to the fall in demand. If, on the contrary, the prices were kept so as to provide a given mark-up, then the reduction of total profits will be lower.

3. It is a rationalization not a description of actual behaviour. Kahn goes so far as to indicate that it is a false rationalization, because the MC = MR formula is followed by entrepreneurs by ‘instinct rather than reasoning’ (Kahn, 1952, p. 126).

4. There is no real opposition between the full-cost and marginal rules if the latter is more generally interpreted as profit maximization rule, which is attained by repeated attempts: ‘Put in that more homely form, the concept does readily lend itself to the operation of the forces of trial and error, and to the display of flair – the success of which by no means depends upon the manner in which it is rationalized’ (Kahn, 1952, p. 127).

Kalecki, for his part, raised the following criticisms. First, account has to be taken of the influence of prices of other firms. He wrote:

The degree of monopoly may, but need not necessarily increase as a result of a rise in overheads in relation to prime costs. This and the emphasis on the influence of prices of other firms constitute the difference between the theory presented here and the so-called full-cost theory.

(Kalecki, 1991, p. 216)

Second, the mark-up concept has no precise theoretical meaning. Like Kahn, Kalecki was also convinced of the analytical vagueness of the full-cost principle, as it appears in the following quotation:

The full cost theory in its familiar version maintains that the firm fixes its price by adding to average prime costs the overheads per unit of actual output or per unit of ‘standard’ output (i.e. per unit of output corresponding to what is considered reasonably full employment of firms’ plant) and ‘something’ for profit. This statement has no precise theoretical meaning, because the amount that is added for profit makes quite a lot of difference to the price and more still to the gross margin.

(Kalecki, 1991, p. 134)

Third, Kalecki, again like Kahn, thought that what the entrepreneurs say they do is not exactly what they do:

The full-cost theory has actually been derived from the replies of entrepreneurs to enquiries about their pricing methods [Hall and Hitch, 1939]. But it is not unlikely that the procedure described by them is not the actual process of fixing prices but only a check applied to prices fixed in another way to see whether they make any net profit.

(Kalecki, 1991, p. 134)

In conclusion, while Kalecki linked the principle for determining prices based on a mark-up to the macroeconomic context and income distribution, struggling to give to mark-up pricing better theoretical foundations and greater empirical content, Kahn remained faithful to the Marshallian apparatus, although he made path-breaking contributions to the theory of duopoly. As has been noted:

Kahn’s research into the cotton and wool industries, and A. Robinson’s involvement with the Cambridge University Press Syndicate, acquaintance with the shipping industry, and general knowledge about real-life firms
Convinced Cambridge economists that firms did in fact employ, either unconsciously or more directly through trial and error methods, marginal pricing methods.

(Lee and Irving-LESSMAN, 1992, p. 278)

Conclusions

Marshall managed to keep in hand both threads of analysis of business behaviour, one based on a short-period static equilibrium of the firm, the other on the evolutionary adaptation to a 'social' environment. In the aftermath of Marshall, the field was opened up to different approaches. Kahn championed the 'marginal principle' for the determination of price and output for the single firm and was instrumental in persuading Keynes to adopt the marginal approach in the General Theory (Marcuzzo, 2002). His endorsement of the principle was mainly the outcome of his investigation into the 'Economics of the Short Period' (Kahn, 1989, 1932a, 1932b) and the result of his collaboration with Joan Robinson between 1930 and 1933, during the writing of her Economics of Imperfect Competition (1933). Keynes never rejected increasing marginal costs in the General Theory and this led him to adopt assumptions, which brought conclusions which were found at variance with facts.26 Kalecki, in his turn, followed a line of research progressively distant from the MC = MR rule, which led him to reject marginal analysis in toto.

On the other hand, both Keynes and Kahn dropped the 'maximizing rule' when analysing entrepreneurs' behaviour in financial markets and regarding investment decisions. The existence of uncertainty and various degrees of conviction with which opinions are formed and held by individuals makes the decision process similar not to an optimum solution, but rather to a condition reached when sufficiently strong motives to do otherwise are lacking. No appeal to the marginal principle is deemed necessary here.

Notwithstanding Sraffa's stance against marginalism, the Post Keynesian endorsement of some kind of full-cost pricing — discarding perfect competition and rising marginal costs — and the rejection by Kahn and Keynes of 'calculus' in dealing with the uncertainty prevailing in money markets, profit maximization was part and parcel of the approach to pricing taken by Marshall, Kahn and Keynes and, until the late 1940s, also Joan Robinson and Kalecki.

This conclusion goes against the Post Keynesian reconstruction of the Cambridge approach to price determination as based on the full-cost principle. On the contrary, our historical investigation has shown that, at least as far as the pre-Second World War years were concerned, the Cambridge of the Post Keynesian view is more an 'invented' (in the sense of Hobsbawm, 1983) than a true tradition.

Notes

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1 It should be borne in mind that a difference exists between price theory, which explains how the equilibrium price is determined, and pricing policy, which explains how entrepreneurs react to cost changes. The former is relevant to understand how the entrepreneurs behave in the position of equilibrium; the latter is relevant to describe their behaviour outside equilibrium. Our analysis is confined here to the role of profit maximization in price theory rather than in the pricing mechanism (in the above sense of a rule of cost-adjustment), which may have behind it, in principle, different price theories. We are indebted to Alessandro Roncaglia for this distinction.

2 Throughout this chapter by profit maximization we invariably mean the equalization of marginal cost to marginal revenue, as it shows itself in the marginalist (neoclassical) approach.

3 Robertson (1930) first stressed the biological analogy in Marshall's representation of the firm.

4 On the Marshallian conception of the firm as distinct from the neoclassical one see, e.g., Leesby (1990, 1999); on the influences of Smith's and Mill's analyses of the entrepreneurial on Marshall see Pesciarelli (1989) and Celdari (2001).

5 The Italian translation is in Kahn (1999).

6 The 'trial and error' metaphor in describing businessmen behaviour was defined as 'benign marginalism' by Mongin (1991).

7 See the interviews with entrepreneurs in coal and cotton industries in Kahn's Dissertation and in Hall and Hitch (1939).

8 It may seem here that some other arguments enter into the expected benefits function by the entrepreneur without entering into the maximization process. We thank Carlo Paniolo for this remark.

9 The chapter was entitled 'The Characteristics of an Entrepreneur Economy' (from the December 1933 table of contents; see Keynes, 1973, p. 421).

10 On Keynes's criticism of neoclassical theory see Carabelli and De Vecchi (1999).

11 The following passage of 1929, from Sraffa's unpublished writings, would hardly have been endorsed by Keynes: '[...][demand and supply curves, marginal productivities, which form the basis of Marshall's theory, (or, rather, Pareto's)] do not exist at any one moment, nor during any period of the recurrent steady process of production and consumption' (Sraffa Papers, D3/12/113). In other words Sraffa, unlike Keynes, was objecting to the entire theory of value and distribution associated to neoclassical analysis, while Keynes was concerned with pointing out those 'logical flaws' of the 'Classics' which had to do with its supposed 'generality'.

12 According to Raffaelli (2003, p. 138):

Both [Marshall and Keynes] rejected the economic man and indeed when Keynes baldly stated that in many a situation 'we fall back [...] on motives [...] which are not "rational" in the sense of being concerned with the evaluation of consequences, but are decided by habit, instincts, preference, desire, will etc.' [...] he was reviving and radicalizing Marshall's lesson. Where they parted company was in the meaning they attached to such words as habit and custom. Keynes [unlike Marshall] played down the ability of habit and custom to grow and improve [...] thanks to the imprintor conferred on them by evolution.

13 On Keynes's concept of 'logical probability' see Carabelli (1988).

14 According to Kalecki's editor, J. Osiatynski, this was the article in question (Kalecki, 1990, p. 501).

15 It was the 'Cambridge Graduate Seminar', chaired by Sraffa and devoted to research students (see Marcuzzo and Sanfilippo, 2007).
16 According to Sawyer (2001, p. 253): '[...it is only in the second half of the 1930s [that] the associated assumptions of non-increasing average costs (up to capacity) and imperfect competition became a central feature of Kalecki's analysis.]

17 The concept was originally introduced by Lerner (1934) and it was defined as the ratio of the difference between price and marginal cost to price. Under perfect competition the degree of monopoly is obviously zero.

18 It was much later, possibly under the influence of her appreciation of Stauffa’s rehabilitation of classical political economy, that she changed her mind, defending Kalecki’s ‘degree of monopoly’ (Robinson, 1979).

19 The concept of ‘degree of monopoly’ was particularly attacked. Keynes renewed his criticism when he accepted Kalecki’s rejoinder to Whitman, who had also criticized the degree of monopoly concept, for the Economic Journal: ‘The difficulty is, I think, that the phrase “degree of monopoly” does not easily convey to the intuition of the reader the precise analytical meaning which your strict definition attaches to it’ (Keynes to Kalecki, 29 October 1941, in Kalecki, 1991, p. 492).

20 For a reading of Kalecki’s price theory in the sense of continuity see Basile and Salvadori (1984-85, 1991).

21 According to Osiatynski (in Kalecki, 1991, p. 496), Kalecki in his 1943 article points out that ‘the difference between the “full-cost” theory and his own approach [lies in the fact that while in the former case average costs have remained constant, full costs have increased with the price’ and ‘the latter] the price also depends on the prices set by other manufacturers’. For a criticism of Kalecki’s rejection of full-cost theory, see Lee (1985).

22 For instance, the increasing marginal cost assumption made him conclude that real and money wages varied in the opposite direction in the cycle. The empirical findings of Dunlop, Tarshis and Kalecki, which disproved his conclusion and with it the inference of an inverse relation between employment and real wage, made him to recant in 1939 (Marcuzzo, 1993).

References
Kahn, R.F. (1932a) The Economics of the Short Period, unpublished manuscript, in Kahn papers, King’s College, Cambridge.


