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Kalecki's Pricing Theory Revisited

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The paper looks at the development of Kalecki's pricing theory, arguing that there was substantial modification and change in the various formulations, and therefore it rejects any argument of continuity in that theoretical development. It considers the elements common to all versions of the theory before concentrating on the earliest formulation. Although, in this version, the analysis concentrated on the individual firm, this was broadened in later versions to incorporate industry-wide considerations; however Kalecki never adequately dealt with the problems of defining an industry. Kalecki's 1939–1942 work on price theory is seen as an unsuccessful attempt to widen the scope of the analysis by utilizing the tools of orthodox microeconomic theory. After the detour provided by these articles, Kalecki made various attempts to reformulate the theory, but did not appear to be satisfied with any of them.

Kalecki was ultimately unable to incorporate his basic insights with respect to the pricing decision in the manufacturing sector of capitalist economies into a formal model which was compatible with his analysis of the determination of distribution and the level of output. He modified and changed his pricing equation from his earliest English publication on that theme in 1938 until his posthumously published paper in 1971.

This theme stands in antithesis to that of Basile and Salvadori (1984–85, p. 259), where they argue for "the continuity of Kalecki's thought with respect to pricing"; that is:

> both Kalecki's initial pricing theory . . . and his last formulation . . . are the same as the simplified version he presented in 1954. (1984–5, p. 249)

This statement is true only at a very superficial level, and, in fact, Kalecki's analysis of pricing evolved through various versions as he attempted to

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solve certain problems inherent in each version. For Kalecki, prices in the manufacturing sector at less than full capacity utilization were determined by a markup on unit prime costs, which was itself determined by the degree of competitiveness. However, because the range of parameters considered by Kalecki varied greatly, this was reflected in substantial differences in the pricing equation in the development of Kalecki's work.

Before discussing the individual models, it is important to identify the common elements which run through all versions of Kalecki's pricing analysis.

9.1 Common elements

The analysis is concerned with advanced capitalist economies, which, for the sake of simplicity, are assumed to be closed with no government sector.

The starting point of Kalecki's analysis of pricing was the distinction between the industrial manufacturing sector and the raw materials sector. Kalecki concentrated on the imperfectly competitive manufacturing sector where excess capacity created elastic supply conditions so that prices were determined on the basis of costs. This was contrasted with the more competitive raw materials sector where short-period inelastic supply meant that prices were directly influenced by changes in demand. Kalecki noted (1954, p. 11): "It is clear that these two types of price formation arise out of different conditions of supply." In the raw materials sector, either increases in demand cannot wholly be met by increases in supply inducing predominantly price responses, or supply is subject to increasing costs so that both quantity supplied and price increase. Despite references to the competitiveness of this sector, this kind of competition should not be confused with the "perfect" competition of neoclassical theory. Rather, it is a reference to the fact that, in this sector, both supply and demand factors play a role in the determination of price. As a result, any market imperfection on the production side can influence price only by manipulating supply. For these reasons, prices of raw materials tend to "fluctuate much more strongly" than other prices (1938, p. 110).

Kalecki's main concern, however, was with the imperfectly competitive manufacturing sector. Here Kalecki was an important originator of the use of reverse L-shaped cost curves, with marginal costs (and, therefore, average variable costs) constant up to the level of full capacity utilization. This, coupled with postulate of general excess capacity as the norm, results in changes in demand being met by changes in supply, without any changes in costs or prices. As a result, Kalecki argued that prices in the manufacturing sector are determined as a markup on costs, with the markup being determined by "semi-monopolistic and monopolistic" factors which Kalecki labeled "degree of monopoly" (1968, p. 168).

9.2 "The Determinants of Distribution of National Income"

The chief concern of Kalecki (1938, slightly revised as the first chapter of Kalecki, 1939a) was with "the determinants of distribution of national income." Nevertheless, there are important discussions both as to the nature of costs in the manufacturing sector and as to the determination of prices in that sector.

In his 1938 analysis of price, Kalecki uses Lerner's measure of the degree of monopoly (see Lerner, 1934):

$$\mu = (p - m)/p \tag{1}$$

where p is price, m is marginal cost, and μ is the measure of the degree of monopoly, that is, the markup.

In both Lerner's and Kalecki's formulation, price must be taken as referring to "net price," which is "the revenue per unit of product after the deduction of advertising costs, etc. "(Kalecki, 1938, p. 100).[1] Similarly marginal costs were taken by them to include only production costs, thereby excluding selling costs, transport costs, and any other costs not directly arising from the production process.

From equation (1), it follows that:

> with a given degree of monopoly the relation of price to marginal cost is a constant $1/(1 - \mu)$. (Kalecki 1939, p. 27)

This is represented in Figure 9.1.

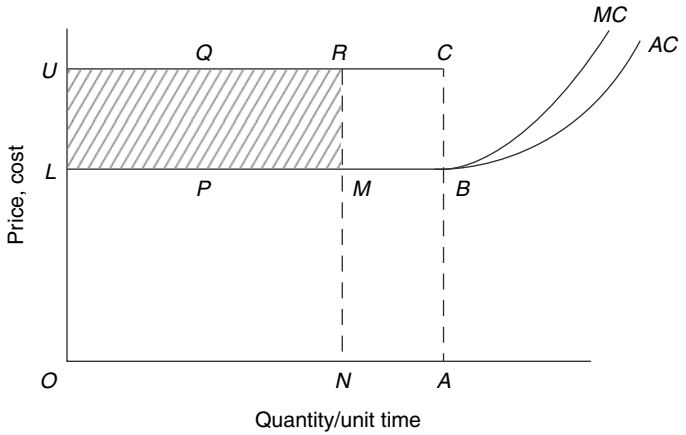

Figure 9.1 Cost curves of an enterprise in an imperfectly competitive market

The cost curves in Figure 9.1 are drawn on the assumption of constant marginal cost, up to the level of full capacity utilization, *OA*. Below this point, marginal cost is constant and equal to average variable cost, which is represented by the line *LPM*. The ratio of price to marginal cost, for a given "degree of monopoly" (i.e., for a given markup), is constant and equal to the reciprocal of one minus the markup. Therefore, from a given marginal cost curve, the "price curve" corresponding to it can be imputed from this proportional relationship, with a given "degree of monopoly." This is shown on the diagram as *UQRC*, which represents neither a demand curve nor an average revenue curve. Rather it is a "price" curve describing the price that results from a given average variable cost curve with given "degree of monopoly."

For this analysis to provide a coherent nontautologous theory of price, the markup must itself be determined. For Kalecki, the clue to the determination of the markup lies in the factors influencing the competitiveness of the industry, for example, the degree of concentration, the relation of transport costs to price, the degree of standardization of price, the organization of commodity exchange, and so on (Kalecki, 1939a, p. 82). These forces may be difficult to quantify with any degree of precision; nevertheless, as Riach has pointed out, they provide a coherent theory of pricing (1971, p. 52; see also Kriesler, 1987, Appendix).

This early version of Kalecki's analysis has been subjected both to the charge that it is a tautology and to the charge that the markup was equal to, and was solely determined by, the elasticity of demand for the output of the firm concerned. It can be shown that under neoclassical profit-maximizing assumptions, with marginal cost equal to marginal revenue, the markup is equal to the reciprocal of the elasticity of demand.[2] It should be noted that this inverse relationship between the markup and the elasticity of demand is applicable only in the absence of advertising. When enterprises engage in "day-to-day" advertising for a product, then the price which is relevant for the firms selling the product differs from the price used to estimate the elasticity of demand. For the former, the relevant price is net price, allowing for the deduction of (inter alia) advertising costs. However, the price which is important from the viewpoint of the consumer, and hence the price utilized to calculate demand elasticity, is the gross price, before any such deduction. The equality of the "markup" with the inverse of the elasticity of demand was derived on the basis of a uniform price. However, where the price paid by the consumer differs from the price relevant to the producer, then this relationship no longer holds. In fact, it may be contended that, even in the absence of advertising, the equality between the "markup" and the inverse of the demand elasticity is dubious. The argument holds because the derivation of the elasticity concepts relies on static equilibrium conditions, and certain shaped cost and revenue curves.

> If we are willing to admit that firms act as neoclassical profit maximizers, then and *only* then . . . [will] the degree of monopoly vary inversely with the elasticity of demand. (King and Regan, 1976, p. 53n)

For elasticity to play a role, it must be calculable, which requires knowledge of the individual firm's demand curve in order to determine marginal revenue. There are, however, insurmountable difficulties in oligopolistic industries for individual firms trying to identify or determine their demand curves. In some situations with, for example, high levels of interdependence of price and demand of the different firms in the market, no determinate demand curve can be considered for any firm in isolation. Yet, the question of the determinacy of a firm's elasticity depends on the determinacy of the firm's demand curve and of its marginal revenue. The idea of elasticity is contingent on the theory of imperfect competition utilized. Hence, it is necessary to consider whether the relevant parameters are determinate in Kalecki's model. This is not an easy question to answer, as Kalecki does not explicitly expound a theory of imperfect competition. In "Money and Real Wages" (1939b, p. 52) Kalecki argues that in the imperfectly competitive (industrial) sector of the economy "establishments are in general not fully utilized since they maintain a monopolistic (cartels) or quasi-monopolistic imperfect competition position in the market." In Kalecki (1938, p. 111) and Kalecki (1939a, p. 35), an important role is assigned to cartels in the "slump" aspect of the trade cycle. Clearly, in the case of cartels, interdependence between firms is so strong as to render incoherent the notion of independent determinate demand curves for individual firms. Therefore, in such cases, the elasticity of demand is also not capable of being determined.

In the case of "quasi-monopolistic" or imperfect competition, Kalecki's views are much more difficult to perceive. In "Money and Real Wages" (1939b, p. 52n) he refers to Sraffa (1926), Chamberlin (1933), and Robinson (1933), while in Kalecki (1939a, p. 28) he refers to Harrod's "Doctrines of Imperfect Competition" (Harrod, 1934). Kalecki's position is ascertainable only by inference. In Kalecki (1938) and Kalecki (1939a) there is no mention either of the marginal revenue curve or of the demand curve. In fact, instead of utilizing a demand curve where it is appropriate, he derives a "price curve" which, although not the same, serves a very similar function. Given this relation, marginal revenue is not determined from the demand curve. Rather, it is represented by the "price line" (*QRC*), which is a line parallel to the constant marginal cost curve, with the distance between the lines determined by the markup, up to the current level of output, *ON*. If the firm wishes to increase output beyond this level, then demand and supply considerations both become important in determining price. In other words, due to the fact that the firms are not profit-maximizers in the static orthodox manner, marginal cost will not, in general, be equal to marginal revenue. However, it is only when these two are equal that the inverse relation between the markup and the elasticity of demand can be established.

Given that the concept of marginal revenue and in particular the demand curve had been established by the time of Kalecki's writing, and that he was probably familiar with it, there is a strong inference that his neglect was due to the fact that he did not feel that it had a role to play in his analysis.

This inference is reinforced by his next major article on microdistribution (Kalecki, 1939–40). In this paper, Kalecki utilizes an entirely new approach, where marginal revenue and the elasticity of demand become important tools of the analysis. However, the use of the firm's elasticity of demand is suspect because it is applicable only in the absence of advertising and in a static equilibrium framework and, in addition, requires marginal revenue to be calculable. Yet Kalecki's earlier model does not require marginal revenue to be calculable and it does allow for the incorporation of selling costs.

In orthodox analysis, a profit-maximizing firm will produce at the level where marginal costs are equal to marginal revenues. In this static framework the markup is a dependent variable. For Kalecki, the markup is determined by the degree of monopoly, so that price becomes the dependent variable within a dynamic framework. This reverses the causality assumed in elasticity analysis which is derived under the assumption of static conditions and is, therefore, hardly relevant in a dynamic framework. Therefore, to postulate a strict equality between the "markup" and the inverse of the elasticity of demand is spurious. This is not to say that the elasticity of demand is not a determinant of the markup, but rather that it is not the sole determinant.[3]

The analysis of price in these early papers of Kalecki concentrates on the individual firm. Although wider considerations may enter into the determination of the markup, they are not institutionalized into the price equations, as they were in Kalecki's later works.

9.3 Pricing, 1939–42

The early formulation of Kalecki's pricing analysis created problems for the analysis of distribution for which it was the foundation.[4] As a result, Kalecki attempted to reformulate the analysis in a manner which introduced wider elements, in particular oligopolistic interdependence, into the pricing equation, as well as providing a framework more susceptible to aggregation. "The Supply Curve of an Industry under Imperfect Competition" (1939–40) and "A Theory of Long-Run Distribution of the Product of Industry" (1941) represent his initial attempts at solving these dilemmas by providing the framework for an analysis of an industry in an imperfectly competitive market. These papers were Kalecki's first attempts to generalize some of the concepts of his earlier papers, as well as his endeavors to deal with the theory of oligopoly. Their lack of success is apparent from the fact that they are ignored by Kalecki, who does not mention them again in later writings.

In 1935, Kalecki left Poland, and, after spending some time in Sweden, he came to England. During this period, particularly due to his friendship with Joan Robinson, he came into contact with the new developments in the analysis of the theory of the firm, which he incorporated into the papers under discussion. Two particular instances of Kalecki's utilizing elements of the new theoretical developments are his use of the distinction between

differing market situations and his use of concepts developed at the Oxford Institute of Statistics associated with the work of Hall and Hitch.

The stated purpose of Kalecki (1939–40, p. 91) is to shed "some light" on "the concept of the short-period supply curve of an industry under imperfect competition." It is clear, however, from the contents that Kalecki had other motives. The problems with deriving such a curve are documented in Robinson (1933, p. 86) and revolve around the inability to derive an industry demand curve independent of the general state of overall demand. To overcome this problem, Kalecki defines a given state of "market imperfection" determined by the elasticity of demand for the product of the firms in the industry and by the ratio of each firm's price to the industry's average price. Changes in "market imperfection" induce shifts in the industry supply curve.

The analysis initially considers "pure imperfect competition," which corresponds to "monopolistic competition" in modern terminology, and then allows for oligopoly.

For "pure imperfect competition," Kalecki (1939–40, p. 91–92) notes:

> The market imperfection is given if the elasticity of demand for the product of each firm e_k is a determinate function of the ratio of its price p_k to the average price $\bar{p}$ or:
>
> $$e_k = \in_k (p_k/\bar{p}) \tag{2}$$
>
> the shape of the function $\in_k$ representing the state of market imperfection.

If for a given $(p_k/\bar{p})$ elasticity rises, then market imperfection is said to fall.

From the definition of own-price point elasticity: $e_k = (do_k/dp_k) \cdot (p_k/o_k)$, and, integrating equation (2) for a given $\bar{p}$, we obtain the following:

$$o_k = c_k f_k \tag{3}$$

where

$$\log f_k = \int \frac{d(p_k / \bar{p})}{(p_k / \bar{p})} \in_k$$

and c_k is a constant of integration.

Therefore, f_k is determined by $\in_k$.

Equation (3) is the demand curve for the output of the k-th firm in terms of the ratio of its price to the industry average price. The term c_k will vary with variations in the general industry demand for the product.

At this stage it should be noted that, although Kalecki derives the demand curve for individual firms and the industry supply curve rather than the

firm's pricing equation, the latter can be inferred from the analysis. In "pure imperfect competition" short-period equilibrium will require marginal cost (m_k) to be equated to marginal revenue (m_r). Under these conditions the latter will be equal to $(1 - 1/e_k)$. Therefore, for a profit-maximizing entrepreneur in short-period equilibrium (as it appears in Kalecki, 1939–40):

$$m_k = p_k(1 - 1/e_k). \tag{4}$$

From (4), the price equation can be derived:

$$p_k = m_k e_k/(e_k - 1). \tag{5}$$

The pricing equation underlying this analysis is similar to that referred to in the discussion of the conditions under which the markup is equal to the inverse of the firm's own-price point elasticity of demand. That is, the two pricing equations will coincide only in a static equilibrium framework where the firm knows (or can estimate) its demand curve and in the absence of advertising. This is the case only in Kalecki (1939–40), but not in his other works.

By equating short-period marginal costs with short-period marginal revenues, assuming that marginal cost curves are horizontal or increasing and that the coefficient c_k bears a definite relationship to the general level of demand for the industry's output, Kalecki derives the industry's supply curve. From this Kalecki (1939–40, p. 97) concludes that:

(1) the supply curve is horizontal or increasing;
(2) a rise in the prices of prime factors causes all ordinates of the supply curve to increase more or less in the same proportion as an appropriate index of these prices;
(3) when market imperfection increases the supply curve usually shifts upwards.

In the case of oligopoly, Kalecki (1939–40, p. 97) argues that price is set in such a way that marginal revenue is greater than marginal cost:

> He does not reduce his price below this level because he assumes that this will induce his competitors to reduce their prices and so the average price, sufficiently to render his operation unprofitable. But neither does he raise the price above this level because he assumes that his competitors will not raise their prices sufficiently to make *this* operation profitable.

This argument, based on the model in Hall and Hitch (1951), has serious shortcomings related to the fact that at the relevant point marginal revenue is undefined, due to the kink in the demand curve at that point. If this were not the case, it is unclear why the price charged would not be at the

point where marginal cost equalled marginal revenue, as this would be the profit-maximizing point for each firm.

The degree of oligopoly is defined by the ratio:

$$a_k = p_k/m_k\ (1 - 1/e_k) \quad a_k > 1 \tag{6}$$

while the price is determined by:

$$p_k = m_k a_k(e_k/[e_k - 1]). \tag{7}$$

Kalecki points out that the entrepreneur will not know his actual elasticity of demand: "In fact, he has only a vague idea on this subject, which may diverge substantially from the actual position" (1939–40, p. 98). Therefore Kalecki advocates replacing e_k with w_k, which is the entrepreneur's estimate of the former (see Basile and Salvadori, 1984–85, p. 251), so we replace (7) with:

$$p_k = m_k a_k(w_k/[w_k - 1]). \tag{8}$$

Similarly, the entrepreneur will be "ignorant ... as regards the precise nature of his marginal cost function" (Kalecki, 1939–40, pp. 98–99):

> It is obvious that for the purpose of the preceding argument we must attribute to the marginal cost *m* not its actual value but what the entrepreneur considers it to be; and that in consequence the relevant marginal cost curve is often horizontal up to the point of the full use of equipment.

Finally, Kalecki incorporates selling costs, not, as in his earlier papers, as a deduction from price, but now as an addition to marginal costs. This was probably due to the problems of analyzing price in terms of elasticity if selling costs are deducted from price.[5]

Kalecki concluded that (1939–40, p. 99):

> the supply curve shifts upward if there is an increase in market imperfection, in the degree of oligopoly or in the rate of prime selling costs. All other properties of this supply curve are . . . the same as deduced above.

The "degree of oligopoly" is determined by the ratio of marginal revenue to marginal cost, where marginal costs include "marginal selling costs" (Kalecki, 1939–40, pp. 97–99). In order to obtain empirical results, Kalecki simplifies the analysis, by introducing the "reduced supply curve," which related reduced prices ("ratios of commodity price to the index of prime factor-prices") and reduced outputs – which compares output with that produced by the equipment of the base year (p. 100). Kalecki then shows

that this relation is very similar to the ratio of proceeds to prime costs. The "quasi supply curve" is defined as "representing the functional connection between the ratio of proceeds to prime costs and reduced output" (p. 103), and this was the proxy Kalecki utilized to investigate "the reduced supply curve." These were the ratios, independent of the argument earlier in the text, which were used by Kalecki to determine aspects of distribution. At the end of the article, insights into distribution are reached, not from the basis of the theoretical discussion, but rather from the manipulation of ratios that have been simplified to yield empirical results.

In Kalecki (1939–40) and Kalecki (1941), an initial attempt was made to use the tools of "orthodox" microeconomic theory. Unfortunately, Kalecki's use of these tools is unsatisfactory as he makes numerous errors,[6] is ambiguous and inconsistent.[7] Some examples (all from Kalecki, 1939–40) are presented below.

1. In the case of "pure imperfect competition" where there is a very large number of firms, it is legitimate to fix the average price of all firms ($\overline{p}$), while the price of one firm varies. But in the case of oligopoly, any variation in one firm's price will influence that average, especially due to the interrelationship of prices assumed by Kalecki. Therefore, in his analysis of oligopoly, Kalecki is incorrect in utilizing results obtained under the assumption of "pure imperfect competition," where that result depends on the average price being fixed while the individual price can vary.
2. Kalecki defines elasticity, in absolute terms, in the conventional way. That is:

$$e_k = do_k/dp_k \cdot p_k/o_k.$$

   The elasticity referred to, however, is not the usual point elasticity of own-price demand; it is the elasticity with respect to the ratio of own-price to industry average price (own/industry elasticity). This creates problems. For example, if both own-price and the industry price change in the same proportion (so that there is no change in the ratio) with no change in the firm's output, then the own/industry elasticity will remain unchanged while the own-price elasticity will vary. Therefore Kalecki's use of elasticity concepts can be seen to be highly ambiguous.
3. The concept of "industry" is taken for granted. This may be reasonable if the industry under consideration consists of single product firms producing a homogeneous output. However, where the products of firms are differentiated in the eyes of consumers then problems with defining an industry become extremely complex.[8] Kalecki does not come to grips with these issues.

In addition to these logical problems, Kalecki himself questions the usefulness of some of the concepts. He admits that the entrepreneur will only have a "vague idea" of "the actual elasticity of demand for his product in

terms of the ratio of his price to average price" and of the "precise nature of his marginal cost function." Further, these vague ideas "may diverge substantially from the actual position" (1939–40, p. 98). In the case of marginal cost this does not represent a problem, as marginal cost can be assumed to be horizontal. But for marginal revenue, there is no such "easy" solution.

It may be that these errors were pointed out, or realized by Kalecki, and played some role in his "abandoning" of these articles. In any case, he did not make further reference to them. The use of the tools of "orthodox" microeconomic theory was not repeated in any of Kalecki's later works. In addition, the attempt by Kalecki, in these articles, to incorporate into his analysis the different market classifications defined by the contemporary literature was discarded. In his next major work on the subject (Kalecki, 1943) no distinction is made between the types of imperfect competition which are treated under the general head of "conditions of market imperfection and oligopoly." The distinction does not reappear in subsequent works where such situations are described as "semi-monopolistic" (see, for example, Kalecki, 1954, p. 13).

For all these reasons, then, it appears that Kalecki abandoned these early articles. They represent a digression that led nowhere and hence were discarded, having little influence on his subsequent analysis. The main theme, in terms of his pricing theory, is taken up again in 1943 with the publication of *Studies in Economic Dynamics*.

9.4 The Analyses of Price Determination in Kalecki's Later Works

In the analyses of price determinations in Kalecki (1943), Kalecki (1954), and Kalecki (1971b), the "Kaleckian approximations" of constant average variable and marginal costs up to the level of full capacity, and of the existence of excess capacity as the general rule in the manufacturing sector, play important roles. The concept of industry which plays an important role in each of these is not adequately defined.[9] In Kalecki (1943), "the firms fix the prices of their products, taking into consideration the mobility of customers (market imperfection) and the influence of their own prices on those of their rivals (oligopoly)" (p. 10); average variable costs also play a role in price determination through their influence on "gross margins" (profits and overheads). "In view of the uncertainties faced in the process of price fixing," Kalecki (1954, p. 12) explicitly states that be does not assume "that the firm attempts to maximize its profits in any precise sort of manner":[10]

> In fixing the price the firm takes into consideration its average prime costs and the prices of other firms producing similar products.

In Kalecki (1954) the mobility of customers arising from the heterogeneity of products was not seen as exerting an influence on the pricing decisions of

entrepreneurs independently of the general interdependence among firms. In the explicit formulation of the pricing equation (equation 9), an important variable is $\bar{p}$, the average price of industry (p. 15), which only makes "sense" if the "industry" is adequately defined. This is reiterated in Kalecki (1971b, p. 160):

> Each firm in an industry arrives at the price of its product by "marking up" its direct cost consisting of average cost of wages *plus* raw materials in order to cover overheads and achieve profits. But this mark-up is dependent on "competition," i.e. on [the] relation of the ensuing price to the weighted average price of this product for the industry as a whole.

For Kalecki, average (prime) costs are the basis on which pricing decisions are made, and such decisions will reflect the competitiveness ("degree of monopoly") of the economic environment facing the decision maker. Kalecki reasons that the relationship between price and cost should reflect such factors. In Kalecki (1938) and Kalecki (1939a) this relationship was formalized as the "degree of monopoly." In Kalecki (1943), rigorous analysis results in a very similar formulation, with the title of "percentage gross margins."

One aspect of Kalecki's 1943 definition of an industry required that the changes in unit prime costs of the firms in an industry be similar. In an industry with n firms, the n prices charged by the firms for their product are denoted as $p_1, p_2, \ldots, p_r \ldots, p_n$; and the average prime costs as $a_1\ a_2, \ldots, a_r, \ldots, a_n$. For the k-th firm, the margin of profits plus overheads is equal to $(p_k - a_k)$, which Kalecki calls the "gross margins," while $[(p_k - a_k)/p_k]$, which corresponds to the measure of the degree of monopoly in Kalecki (1938, 1939a), is called the "percentage gross margins." Kalecki shows that if the average costs of all the firms in the industry change proportionately, prices will react in such a way that there will be no change in percentage gross margins. After examining the implications of a change in the conditions of market imperfection (transport costs), Kalecki concludes "that with a given relation of average costs within the industry, and on condition that no firm is working up to capacity, the percentage gross margins $[(p_k - a_k)/p_k]$ reflect changes in the state of market imperfection and oligopoly" (1943, p. 11). The concept of the percentage gross margins is then refined by Kalecki and used to analyze the determination of distributive shares.

In Kalecki (1954), the parameters defining the pricing decision of the firm are the firm's average prime costs and the interrelationship with the prices of other firms producing "similar products." This is embodied in the following equation from Kalecki (1954):

$$p = mu + n\bar{p} \tag{9}$$

where

p is the firm's price,
u is the firm's unit prime cost,
$\bar{p}$ is the weighted average price of all firms producing "similar" products, "weighted by the respective outputs and inclusive of the firm in question" (p. 12n), and
m, n are positive coefficients.

Clearly, for $\bar{p}$ to be at all meaningful the "industry" or relevant group must be adequately defined. If $n\bar{p}$ is interpreted as expressing the influence of the prices of other firms producing "similar products," then conceptual problems arise with Kalecki's method of weighting prices. The first problem results from consideration of what the most suitable weighting system would be. On the interpretation of $n\bar{p}$ stated above, the appropriate weights for the calculation of $\bar{p}$ for each firm would be related to the extent to which each firm is seen as a competitor. Firms which are "nearer" to the firm in question in terms of competitiveness (cf. Kaldor, 1934) should have a higher weight than firms which are "farther." Only rarely will such a weighting system be equivalent to the one proposed by Kalecki, which required weighting on the basis primarily of output; this can only be regarded as a proxy. There is a further problem, however, with Kalecki's weighting system. The weighting of a firm's price by its output introduces bias into the calculation because output is not independent of price. This problem was emphasized by Sylos-Labini (1969), where the difference between large firms and small firms is qualitative as well as quantitative, resulting from technological discontinuities: "Only large firms can apply certain methods, both technical and organizational, and only large firms can realize certain economies of scale" (p. 35). Therefore a distinction can be drawn between the extremes of large, dominant firms with high output technologies operating at low cost and charging prices below the industry average, and small firms with lower output and hence higher costs and charging higher than average prices. It follows that bias, in the measure of the industry's average price, is introduced resulting from this correlation between a firm's price and the weight accorded it (i.e., output).

Finally, problems result from the inclusion, in the calculation of $\bar{p}$, of the "firm in question." It must be assumed that the firm's price used to calculate $\bar{p}$ is a datum, namely, the actual price charged by that firm, as opposed to p, which is a decision variable. Nevertheless, there is an incongruity because, according to equation (9), the price charged by a firm can further influence that firm's pricing decision. Consider, for example, the effects of a decline in the unit prime costs of a single firm—assuming this has no effect on other firms. By equation (9) this will lead to a reduction in that firm's price. This in turn will cause a reduction in the industry average price $\bar{p}$,

causing a subsequent reduction in p. Again this reduces $\bar{p}$. This process continues until eventually it converges to a new equilibrium.[11] Movements along the equilibrium path are generated solely by changes in the firm's price and the influence of those changes on the industry average price. It is unlikely that the firm would take so long to adjust to changes in its own costs. Even if other firms react, so there are other influences on the industry average price, each firm will continue to be, at least partially, influenced by its own price. In an industry where all the firms' price equations are of the same type as (9), then any change in the price charged by one firm, because of its impact on the industry average price, will cause changes in the price of all firms. This will continue with a long adjustment process converging to a new equilibrium. The problem with this scenario is that it does not conform to evidence (both empirical and theoretical) which suggests relative price stability in oligopolistic industries.

For equation (9), Kalecki "postulates" $n < 1$. To justify this, he considers a firm for which $p = \bar{p}$; then:

$$p = mu + np \tag{10}$$

$$(1 - \mathrm{n})p = mu$$

$$p = \frac{mu}{1-n}.$$

Now, given: $mu > 0$ and $p > 0$, this means that, for that firm, n must lie between zero and one ($0 < n < 1$).

In the general price equation (9), m and n reflect different influences on price. The symbol m reflects the markup, which is an indication of those influences on price resulting from considerations of general competitiveness, with the important exception of the interdependence of the firms within the industry. The symbol n reflects the influence on price of the interdependence of the firms within the industry. It should be noted that it is mathematically possible for n to be greater than 1 for any firm whose price is greater than the industry average price ($\bar{p}$). However, economically this is unlikely as it implies that the firm under consideration is extremely influenced by the other firms—in which case it would be unlikely to charge so high a price.[12]

The important difference between the analysis of price determination in Kalecki (1943) and that in Kalecki (1954) is the explicit inclusion, in the price equations of the latter, of the term reflecting the interdependence of the firms within an industry. In order to calculate the industry's average price ($\bar{p}$), the industry must be clearly defined. This is not the case in the analysis of Kalecki (1954), where the definition of industry is not stated precisely.[13]

5 "Class Struggle and the Distribution of National Income"

Although the text of Kalecki (1954) was reprinted in a second edition in 1965 and in Kalecki (1971a), his dissatisfaction with this approach is apparent in the version of the analysis contained in his final paper on distribution (Kalecki, 1971b), where the measure reflecting the degree of monopoly in Kalecki (1954) is substantially modified. Firms determine their product's price (p) by "marking up" direct (or prime) costs (u). The markup $[(p - u)/u]$ is itself determined by the interdependence (or "competition") of the firms in the "industry," which is reflected in the ratio of the firm's price (p) to the weighted average price of the industry ($\bar{p}$), so:

$$(p - u)/u = f(\bar{p}/p) \qquad (11)^{14}$$

By manipulating equation (11), Kalecki obtains:

$$p = u[1 + f(\bar{p}/p)]$$

As Kalecki argues, "f is an increasing function: the lower is p in relation to $\bar{p}$, the higher will be fixed the mark up" (1971b, p. 160).[15]

The inadequacy of Kalecki's concept of industry is of importance as the values of $\bar{p}$ and f are strongly influenced by the exact dimensions of the particular industry being analyzed.

Kalecki argues that the function f will vary for the various firms in the industry and will reflect "semi-monopolistic" influences and that increases in these influences are reflected by a higher f. Variations in prices among the firms in an industry result from differences in direct costs and in the function f.

According to Kalecki, with function f constant, proportionate changes in all direct costs will lead to proportionate changes in all prices. This follows from equation (11), *as* $\bar{p}/p$ will not change. If, on the other hand, the direct cost of only one firm changes, then its price will change less than proportionately due to the change in the opposite direction of $\bar{p}/p$.

High profit levels,[16] if they accrue to only one firm, will increase the bargaining strength of trade unions for increased wages. If wage increases are granted, and there is no change in the function f, then by equation (11) prices will rise, providing the incentive for new wage demands. This is likely to continue, thereby eroding the competitiveness of the firm concerned. The only solution is the acceptance of a lower value for f and hence a lower markup.

It is important to note that in Kalecki (1971b) the basic analysis of distribution is conducted in terms of macroeconomic aggregates such as total profits, aggregate wages, and total output. The main role of the "microanalysis" is in determining the likely changes in price resulting from changes in these aggregates, in particular, of trade union pressure. In other words, from 1954,

Kalecki made no new attempts at analyzing pricing or the relative distributive shares utilizing microeconomic concepts. The reasons for this are never given, but can be deduced from the arguments presented in this paper, as follows. First, Kalecki's earliest work on pricing theory did not adequately incorporate the economic environment facing firms, nor the influence of competing firms. Second, Kalecki was unable to provide an analytically adequate definition of industry, despite the importance of this for his later works on pricing and distribution. Finally, Kalecki's attempts to use the tools of orthodox analysis in his pricing equations, in Kalecki (1939–40, 1941), contained analytical problems which led to their being abandoned.

It can be seen that, although in all versions of Kalecki's pricing analysis the firm sets its price on the basis of unit prime costs, it is only in the later versions that industry average price enters as an independent variable. Further, contrary to the arguments of Basile and Salvadori, we have seen that Kalecki's pricing analysis underwent substantial modification and development.

Notes

1. It should be noted that advertising has two distinct components: the initial (capital) advertising expenditure of a firm attempting to break into a market, and the "day-to-day" advertising of established firms. It is the latter which is relevant here.
2. See, for example, Kalecki (1938, p. 100), Kalecki (1939a, p. 19), and Sylos-Labini (1969, p. 96). See also Kalecki (1942, p. 123), where he utilized this relationship to argue for the importance of the "degree of monopoly" as a determinant of gross profit. But note that in the two original Kalecki references this relationship is referred to only in a footnote or in passing while in Kalecki (1942, p. 123; emphasis added) it holds only under "*pure* imperfect competition."
3. Cf. Sylos-Labini (1969, pp. 90–93). Some economists have confused the role of elasticity in Kalecki's analysis. They see elasticity either as being the measure of the "degree of monopoly" or as being its sole determinant, rather than as only one determinant. For example, H. G. Johnson (1973, pp. 197–199) takes this confusion to its logical extreme with the argument that "the elasticity of demand is not determined by the capitalists in a particular industry since it is not a parameter of behaviour but a variable" (p. 198). This entirely misconstrues the role of elasticity in the analysis. Similarly, Kaldor concludes that "Kalecki built . . . a simplified theory of distribution, where the share of profits in output is shown to be determined by the elasticity of demand alone" (1968, p. 36S). Following Kaldor, Nuti contended that either the "degree of monopoly" is a tautology or "the degree of monopoly is obtained from the demand curve from each firm and is equal to the inverse of the demand elasticity, given the hypothesis of profit maximization; the theory runs up against the same problems as neoclassical theory, namely the reliance upon micro-economic concepts (here the elasticity of demand) to explain a macroeconomic problem" (1972, p. 226). See also Rostow (1948, p. 226), Davidson (1959, pp. 53, 133n), Dobb (197S, p. 269), Hahn (1972, p. 37), Rowthorn (1981, p. 36n), and Reynolds (1983, p. 497). In all these cases the role of the elasticity of demand has been greatly overrated. As noted above, Kalecki referred to it very casually and it played no role in his theoretical construct.

4. The emphasis, in these early papers, on the individual firm meant that the pricing decision was analyzed independent of the economic environment in which the firm operated. More importantly, Kalecki experienced severe problems in aggregating from the level of the individual firm to that of the industrial sector as a whole, due to the problems caused by the possibility of changes in the composition of output. See Kriesler (1987, pp. 48–51).
5. The same analysis of pricing is used in Kalecki (1940 – see pp. 34–37).
6. One example is Kalecki's use of marginal revenue in a situation in which marginal revenue is undefined.
7. One inconsistency involves obtaining equation (2) (Kalecki, 1939–40, p. 92) from the positive definition of the elasticity of demand, namely:

$$e_k = do_k/dp_k \cdot p_k/o_k$$

where e is the elasticity of demand for the product of the k-th firm, and p and o are that firm's price and output, respectively.

On the other hand, equation (3) requires the "negative" definition of the elasticity of demand:

$$e_k = -do_k/dp_k \cdot p_k/o_k$$

to be used.

To show this, consider the definition of the marginal revenue (MR_k) of the k-th firm:

$$MR_k = d(p_k o_k)/do_k = p_k + o_k \cdot dp_k/do_k$$

$$= p_k(1 + o_k/p_k \cdot dp_k/do_k).$$

Substituting $e_k = -do_k/dp_k \cdot p_k/o_k$, we obtain the following:

$$MR_k = p_k(1 - 1/e_k)$$

which is the expression utilized by Kalecki to derive equation (3).
8. The difficulty of defining either the industry or the commodity where there is product differentiation has been well documented (see Kriesler, 1987, pp. 11–13; 24–26).
9. Kalecki (1943) proposes a definition of industry based on the interdependence of both cost and price. Neither criteria separately gives an unambiguous definition of an industry; and, to a certain extent they are mutually exclusive. Kalecki (1954) simply talks about "firms producing similar products," while the issue is not discussed at all in Kalecki (1971a). See Kriesler (1987, pp. 60–64).
10. This point seems to have been missed in Fine and Murfin (1984), who stress the importance of profit maximizing for the "Kaleckian tradition" (see, for example. p. 101).
11. For proof of convergence to equilibrium, see Basile and Salvador (1984–85, Appendix).
12. Asimakopulos disputes Kalecki's assertion that $n < 1$. "In situations where price is set by a price leader and followed by others, n would be equal to one for the price followers and thus m would be equal to zero" (1975, p. 317). Because this relates to homogeneous oligopoly, it is not a criticism of Kalecki, who concentrated on

differentiated oligopoly. However, a differentiated model is discussed in a footnote: "This conclusion also holds when there is product differentiation. The price equation for a price follower would still have m equal to zero, with

$$p_F = p_L + d \text{ or } p_F = (1 + d)p_L$$

where p_F and p_L represent the prices of the follower and the leader and d is the recognized price differential, expressed either in absolute terms, or as a ratio, whichever is appropriate" (p. 317n). However, Asimakopulos' pricing model describes a different market situation from that envisaged by Kalecki, and the two can be reconciled if Kalecki's assumptions are replaced by: $0 \leq n \leq 1$, $m \geq 1$, $0 < \bar{n} < 1$ and $\bar{m} > 1$. See Basile and Salvadori (1984–85, pp. 254–255).

13. The analysis of price determination in these later papers is important as it provides the starting point for Kalecki's analysis of distribution. In addition, Kalecki's analysis of price determination had an important impact on economic theory. Many important works have been significantly influenced by Kalecki's price analysis. For example, Baran and Sweezy (1966), Steindl (1952; 1979), Sylos-Labini (1969; 1974; 1979; 1979a), Robinson (1956), and Cowling (1983) have all acknowledged their debt to Kalecki's work on prices.
14. This equation is a weak form of equation (10) and can be derived as follows:

$$p = mu + n\bar{p}$$

$$1 = m(u/p) + n(\bar{p}/p)$$

$$u/p = \text{l/m}[\text{l} - n(\bar{p}/p)]$$

$$(p - u)/u = [n(\bar{p}/p) - (1 - \text{m})]/[\text{l} - (\bar{p}/p)]$$

$$= f(\bar{p}/p).$$

I am indebted to A. Asimakopulos and R. Rowthorn for this point. See also Basile and Salvadori (1984–85, p. 255).

15. It should be noted that f in this case is determined by the same factors as m and n and is not, therefore, determined solely by trade union activity, as Cowling (1982, p. 100) seems to suggest.
16. The important variable is profit level, not markup, as a high markup is consistent with a low profit level if, for example, overheads are high.

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