Stigler's Adaptable and Indivisible Plant and the Micro/Macro Schism

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Introduction

A fundamental question for macrotheory is, "How could any price or wage that does not clear the market prevail, since it entails that there are both buyers and sellers who would gain from making a deal at a different price?" (Olson 1989, 378). Many economists deal with this question within a framework which starts with the postulate that firms normally maximize their profits by selling a quantity which equates short-run marginal cost (SRMC) with price, where SRMC is taken to be the derivative with respect to output of expenditures on labor and materials. The contribution from price to overhead costs is viewed as a residual, determined by the difference between marginal cost and average variable cost, and if such a difference exists it must increase with output because marginal cost rises more rapidly than average variable cost. But recent articles (Bils 1987; Hall 1988) add to the already abundant evidence (Neal 1942; Tsiang 1947; Ruggles 1955; Wilder 1977; Coutts 1978) that price-cost margins in manufacturing do not vary positively with cyclical changes in output.¹ One way to explain the divergence between theory and observation is to say that the model applies to competitive firms, like wheat farmers, not to the average manufacturing firm. But profit-maximizing monopolists or oligopolists would

¹. Domowitz et al. (1988) report finding procyclical variations in price-cost margins for the average manufacturing firm for the period 1958 to 1981, where "cost" is a sophisticated estimate of marginal cost (in contrast to direct costs as reported in census data), but the variations are small (a ten percent decrease in cost utilization is associated with a one percent decrease in margin) and price is found to exceed short-run marginal cost for most manufacturing firms most of the time. The other studies cited show percentage gross margins which are mainly constant or contracyclical.

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also be likely to experience pro-cyclical price-cost margins, and there are other reasons (discussed below) for retaining the proposition that most manufacturing markets are competitive.

It therefore seems preferable to look at imperfect information rather than market power to explain stable margins in the average industry, but a mundane source of such imperfection seems to receive inadequate attention among economists. The view of cost accountants is that although prime costs per unit can be traced with some accuracy they are only a fraction of total unit costs, and that marginal prime cost is usually constant over the relevant range of output. Consequently the firm can recover its overhead costs (some of which are interest and dividend payments) only if price exceeds marginal prime cost by a substantial margin, and the difficulty of calculating the proper magnitude of all the layers of overhead costs may well justify using a constant mark-up formula for each product (but with different ratios among products to distribute joint and common costs properly).

The mark-up pricing model is in fact commonly used in conventional macrotheory (for example, Dornbusch and Fisher 1987), but the evident conflict with conventional microtheory is bothersome and raises questions about ad hoc postulates. (Note that the mark-up model postulates that prices are unresponsive to pure changes in demand, but responsive to changes in input prices; it thus differs from models which postulate lagged responses to changes in demand and supply.) I argue that it is really microtheory which is founded on the dubious assumptions that the typical manufacturing plant is adaptable and indivisible in the short run (and consequently has a U-shaped marginal cost curve), when in fact the appropriate assumptions for short-run macro analysis are nonadaptability and divisibility (generating a marginal cost function that remains constant up to the point at which overtime wage premia are paid). The latter view seems so compelling as to raise the question: How did economic instruction come to emphasize a model of price-cost-output behavior which so poorly fits the empirical evidence, when more realistic models of the manufacturing sector had been offered by economists such as Alfred Marshall (1920), J. M. Clark (1923), and Michael Kalecki (1939)? My answer points out that George Stigler's price theory text (1942, 1946, 1951, 1966) persuaded generations of graduate students that the law of diminishing returns ensures that short-run marginal cost rises enough so that a price which equals that cost will generate an adequate contribution toward over-
head costs for all firms except a few natural monopolies. Frederic Lee (1984) has provided a comprehensive review of the process by which the $P = MC$ paradigm was defended in journal articles; here I focus on Stigler's text which preceded the articles and remains an important influence because his conclusions continue to appear in almost every microeconomics text, usually without discussion of the underlying assumptions. I supplement my criticism of Stigler's reasoning with a suggestion that his enthusiasm for laissez faire policies led him to deviate from his own earlier and sounder conclusions.

**Background**

Describing classical value theory, Blaug wrote,

Ricardo, Mill and Marx treated all commodities as produced under conditions of constant costs and fixed technical coefficients. Ricardo admitted the variability of factor proportions in the chapter on "Machinery," but this concession was never incorporated into the main stream of classical theory. Even so, generality was sacrificed in the case of agricultural goods where marginal costs of production diverged from average costs. Classical economics, therefore, was forced to operate with two theories of value: the price of industrial goods depended solely upon conditions of supply, but the price of

2. A sketch of textbook history may be helpful to indicate the influence of Stigler's text in persuading economists to abandon accountants' cost functions and Walrasian or Marshallian full-cost pricing models. Fritz Machlup (1943) said of Stigler's text, "Its nearest substitutes are either less advanced or less textbook or less modern: Boulding, Hicks, or Marshall" (263). Boulding and Marshall are discussed below; J. R. Hicks's treatise recognizes the legitimacy of doubts about the real-world applicability of the necessary conditions for competitive equilibrium in light of "the frequent conviction of entrepreneurs themselves that they are producing under conditions of diminishing average costs" (1946, 82), and of possible price rigidities "due to lingering notions of a 'just price'" (265). Texts by Henderson and Quandt (1958) and Hal Varian (1978) which succeeded Stigler's as the basic graduate microeconomics text are more abstract and avoid issues such as the applicability of the perfectly competitive model to the typical manufacturing firm, but they feature the U-shaped marginal cost function (without discussion of the underlying assumptions) and thus eschew questions about the practicality of marginal-cost pricing where plants are unadaptable in the short run. Edwin Mansfield's book (1985) is unusual among current American microtheory texts because it presents empirical evidence on the prevalence of ski-shaped cost curves (223–26) but it fails to link this with discussion of the social desirability of cost-plus pricing or with analyses of the determinants of the size of the markups (356), and it uses U-shaped marginal cost curves in all the analytical sections.
agricultural goods varied with the scale of output and hence the pattern of demand. (1962, 277)

Walras (1954, 243–50) retained the classical assumption of fixed technical coefficients (apart from exogenous changes induced by capital accumulation or technological change), so his long-run average and marginal cost functions were both equal to $a_Lw + a_Kr$ where $a_L$ and $a_K$ are the labor and capital input requirements per unit of output and $w$ and $r$ are prices of labor and capital. (His third input, land, may be added if relevant.) Walras assumed (after struggling with problems of imperfect information in the first three editions) that production facilities are constructed only after the auctioneer finds market-clearing prices and contracts for all products, so his final model permits neither divergence between short-run and long-run costs, nor profit within the firm. (Economy-wide aggregates determine $w$ and $r$; the supply price of the commodity will rise as output expands because the price of a relatively important scarce input is pulled up, not because the firm encounters internal diminishing returns.) However, if we imagine that the firm contracts in advance for its capital stock, but is free to vary its labor input, and that stochastic perturbations in demand cause divergences between output and capacity, we can envision a short-run marginal cost function which apparently equals $a_Lw$ when output is less than capacity and is undefined for outputs greater than capacity.3

If price is equated to this right-angled SRMC function, the perturbations in demand will cause sharp price changes and the firm will ex-

3. Predictable fluctuations can be dealt with by time-of-use variations in price which maintain equality between price and true marginal cost (including a proper contribution to capacity cost), but unpredictable fluctuations obscure the magnitude of true marginal cost. If a firm is unable to supply a customer during a boom, one should count as a cost the loss of goodwill, and if inventories are feasible, one should count as cost of selling during a slump the highest discounted value of any possible future sale. But economists and accountants who routinely deal with imperfect information usually define marginal cost with reference to observable production costs, and since macrotheory (especially forecasting) must be tied to observables, I deal with “apparent” marginal cost as it would customarily be estimated by regression analysis or cost accounting (as in Dean 1976) rather than a more nebulous version which includes unobservable user costs (as in Neal 1942, ch. 4). Microtheory can retain the marginalistic paradigm by postulating that price equals marginal-factor cost plus marginal-user cost (as in Keynes 1936, 66–73), but if marginal costs are nebulous, macroeconomic instability may result from the inability of decision makers to accurately calculate them when there are exogenous shocks, and if one assumes that the user costs are revealed by the margin between price and factor cost there is no evidence that they rise with output to a degree sufficient to fit the neoclassical explanation that gross profit per unit is determined by the difference between marginal cost and average variable cost.
perience short-run profit or loss as price exceeds or falls short of $a_Lw + a_Kr$. Kenneth Boulding said that one might reasonably assume "that as long as a firm is operating under capacity, its average variable and marginal costs are constant" but that they would rise sharply at the limit of capacity (1948, 483–84). Boulding feared that such cost functions in the presence of fluctuating demand and long-lived capital tended to create industries with chronic excess capacity, resulting in "a long period of unprofitable production, if the firms in the industry have perfect markets, or perhaps in much idle capacity if the industry is monopolistic" (1948, 483–86; see also 1941, 441–42). But this depiction may be tempered by recognizing that a right-angled cost function can usually be rounded by operating with overtime wage premia (discussed below) so as to achieve a "ski-shaped" marginal cost function which is constant over a wide range and then rises, and by admitting that a market structure that is imperfect, in that price often exceeds short-run marginal cost, may still be highly competitive in the common sense of the term.

Marshall used this approach for short-run analysis in manufacturing; he did not use the term "monopolistic" to describe industrial prices which were held above their short-run marginal costs. "The true marginal supply price for short periods . . . is nearly always above, and generally very much above the special or prime cost for raw materials, labour and wear-and-tear of plant, which is immediately and directly involved by getting a little further use out of appliances which are not fully employed" (Marshall 1920, 374–75). His explanation merits attention.

In a trade which uses a very expensive plant, the prime cost of goods is but a small part of their total cost; and an order at much less than their normal price may leave a large surplus above their prime cost. But if producers accept such orders in their anxiety to prevent their plant from being idle, they glut the market and tend to prevent prices from reviving. In fact however they seldom pursue this policy constantly and without moderation. If they did, they might ruin many of those in the trade, themselves perhaps in among the number; and in that case a revival of demand would find little response in supply, and would raise violently the prices of the goods produced by the trade. Extreme variations of this kind are in the long run beneficial neither to producers nor to consumers; and general opinion is not altogether hostile to that code of trade morality which condemns the
action of anyone who "spoils the market" by being too ready to accept a price that does little more than cover the prime cost of his goods, and allows but little on account of his general expenses. (Marshall 1920, 375)

Marshall describes the normal supply price of a yard of cloth as the sum of the necessary outlays per unit for wages, material, depreciation, managerial salary, interest and insurance on capital (1920, 344n). The first three are prime costs which must always be covered by price; the last two are supplementary costs which "must generally be covered by the selling price to some considerable extent in the short run... and completely covered by it in the long run" (Marshall 1920, 359–60; see also J. M. A. Gee, 1983).

Marshall's perception accords with the views of cost accountants (then and now); the standard unit cost of an item consists of direct labor and material costs plus variable overhead plus fixed overhead per unit at standard volume, and input requirements are assumed to be fixed in the short run (for example, Moriarty et al. 1986, 66–78; Oswald 1984, 264–94, 331–43). In contrast, modern neoclassical theory assumes that substitution of labor for capital occurs in the short run as a variable quantity of labor is applied to a stock of capital which is fixed in value but not in form, and which is not readily divisible. These assumptions became orthodox with the success of Stigler's text, but reexamination of his arguments shows their weakness and raises questions about why he so adamantly rejected the ski-shaped curve.

Stigler's "Short" Run Marginal Cost Function

In a scholarly article Stigler said that a right-angled marginal cost function would apply in cases where the plant is divisible and unadaptable, that short-run marginal costs may be constant within certain ranges of output, and that "numerous writers have been too hasty in asserting that increases in output necessarily entail rising marginal costs" (Stigler 1939, 306–7). However, in successive editions of his price theory text, Stigler argued ever more strongly against the hypothesis of a marginal cost curve which is horizontal for a range and then steeply rising. He asserted that the law of diminishing returns (or variable proportions) "is one of the few pillars of economic analysis that has been accepted by most economists since its first formal statement, at the beginning of the nineteenth century" (Stigler 1942, 118), but his
textbook ignores the fact that the nineteenth-century acceptance applied to extractive sectors such as agriculture and fails to mention that even Marshall did not apply it to industrial activity. Stigler admits that “the law is applicable only to the case where the proportion in which the productive services may combine is variable” (1942, 121) but he defends its general applicability with this example:

Assume that a crew of 10 men with 10 shovels digs 50 yards of ditch per day. If now an 11th man is added to the crew, what will be the marginal product of 11 men? Of course the answer turns on the equipment of the 11th man. . . Several possibilities are open:

a. There may be only one type of shovel suitable for this kind of work. Then one of two things may be done: First, the man may be equipped with another shovel. This is a case of rigidly fixed proportions. . . It will be impossible to allocate the increased product between the laborer and his equipment. Second, the 11th man may be used to spell off other workers, to fetch (as D. H. Robertson has suggested) pails of beer, or for similar purposes. He will then add some product, but considerably less than if he were also fully equipped. This may be termed a case of partially fixed proportions.

b. The second major alternative, however, is the one implicit in the law of variable proportions. In general there is not only one type of equipment that the 11th man may use. The entrepreneur may substitute 11 smaller shovels for the 10 previous large ones. If the 11 smaller shovels have the same cost (say, $100) as did the previous 10, then the investment in equipment has remained unchanged, and the additional product of the 11th man is attributable only to that man. This is a special case of the general requirement that the productive services which are held fixed in quantity must be readapted in form to the changing quantity of the variable service. (Stigler 1942, 122)

A subsequent edition of his text makes it even clearer that Stigler’s "short" run is fairly long: "normally he can make this change [in the form of the fixed factor] if given time: sooner or later the particular

4. Elsewhere Stigler criticizes "Marshall's tendency to restrict the law of diminishing returns to agriculture" and says that such a restriction was prevalent among economists at the turn of the century; he also describes F. M. Taylor's belief that fixed proportions are of great importance in many industries (Stigler 1941, 67, 119, 168–69).
factors need to be replaced and they can then be replaced by more appropriate 'constant' factors" (Stigler 1966, 129). Realistically, the relevant period for analysis of macroeconomic instability is generally not long enough for the average (as opposed to the individual) firm to change the form of its machines, and most machines are built to operate with a certain ratio of labor hours per machine hour; this point had been made by J. M. Clark (1923, 86), by D. H. Robertson (1931, 229), and by Nicholas Georgescu-Roegen (1935). (Stigler's view does seem plausible for agriculture, because once a crop is planted the seeded acreage may be regarded as a fixed and indivisible factor to which variable amounts of labor and other inputs may then be applied to yield smoothly diminishing returns, a result in accord with the law of variable proportions.)

In fact, short-run changes in manufacturing output are economically achieved by varying the hours of employment of the "fixed" plant proportionally with the variable inputs so as to maintain constant proportions among the inputs actually used. Stigler (1942, 169) recognized that constant marginal cost would prevail when a variable amount of labor is applied to a stock of one hundred identical machines, some of which are idle, but he neglected the similar case of altering the fraction of idle plant by varying its weekly hours of utilization. His neglect of this form of divisibility is puzzling since such variation was common during the 1930s and 1940s and its effect on unit cost was generally observed to be negligible except for the effect of the "time and a half for overtime" provision of the Fair Labor Standards Act of 1938. Lloyd Reynolds (1942) observed that "there need be no marked departure from constant marginal cost up to the limit of one-shift, normal-hour operations. Under existing rules concerning overtime payment, work in excess of forty hours per week involves a discontinuous increase in marginal costs" (277). Similar observations are found in Alfred Neal (1942, 99–102) and in the report of the Committee on Price Determination of the National Bureau of Economic Research (1943, 101–13).

In practice, the Federally mandated premia for overtime cause average

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5. The widely used introductory text by F. M. Taylor (1921, 139) had pointed out how divisibility of the fixed factor would permit disposing of some of it so as to achieve constant returns throughout what would otherwise be stage 1 of the production function; Clark (1923, 86n) had similarly argued that manufacturing plants typically operate with constant returns in a broad region between Taylor's stages 1 and 2.
hourly wage rates for production workers to rise gradually rather than
abruptly as plant operating hours approach and exceed forty per week
because overtime is calculated for individuals and there is much dis-
persal of weekly hours among the workers due to absenteeism and
other factors (Solomon, 1942), so institutional arrangements generate
a ski-shaped marginal cost function from a right-angled short-run pro-
duction function.\footnote{A number of trade associations define “capacity” as
the output attainable with a six-
day work week so it is not surprising that normal output is commonly
described as 80–85
percent of “capacity.” It does not follow that firms could permanently increase output by
twenty percent without raising price, because prices of raw materials and probably labor
would be driven up; in this indirect way price would exhibit lagged response to a sustained
increase in demand. However, “transitory” increases in demand (which later may prove to be
sustained) are initially accommodated with overtime pay for production workers and extra
effort (often unpaid) from management (Yordon 1970, 64). It also is worth noting that Kahn
(1989) described overtime premia as a common (before 1929) method of expanding output
above the normal level while insisting that “it is not possible to assume that prime cost can
in general be reduced by reducing output below the normal level” (53–54).

Stigler’s article (1939, 321) had referred to the “important pioneer
work of Dr. Joel Dean” which reported constancy of marginal costs,
but his textbook version (1952, 129; 1966, 142) omits direct reference
to Dean and expresses skepticism toward the literature which reports
findings of ski-shaped marginal cost functions and which “denies the
short-run validity of the law of diminishing returns.”\footnote{Stigler’s text
(1952, 129; 1966, 142) does cite the work of the Committee on Price
Determination (1943) and of J. Johnston (1960), and these works do cite Dean.} Stigler
counters by arguing that the postulate of smoothly rising marginal cost over the
relevant range is justified by “the observed behavior of competitive
firms” (1966, 142–43; see also 1952, 129) as shown by the fact that in
bituminous coal mining and cotton spinning in the 1930s most of “the
variation in output was brought about through changes in the output
per mine [or mill], and this is inconsistent with the hypothesis of a mar-
ginal cost curve horizontal for a range and then steeply rising” (1952,
167–68; see also 1966, 144). Stigler does not notice that there is no
inconsistency if prices generally exceed short-run marginal costs, as
they would according to Marshall’s model. Because the “multiplier”
described by Richard Kahn (1931) became part of Keynesian econom-
ic, it is of interest that the two U.S. industries which Stigler describes
are the same two which Kahn had earlier observed to have constant
marginal costs in the U. K. and which thus led him to hope that
expansion of output rather than rising prices would result if the government were to stimulate the economy by expanding investment. In the absence of evidence that Stigler was aware of Kahn’s empirical studies it seems just coincidental that they looked at the same two industries, but it is significant that these two industries were generally regarded as competitive; as Kahn put it, “If competition is not perfect in cotton-spinning, it might well be asked where perfection is to be found” (1989, 59). There would be nothing provocative for economic theory in finding constant marginal cost for a monopolist, and the presence of a few monopolistic markups would have trivial significance for stabilization policy or for the theory of income distribution. It appears that concern over the latter issue led Stigler to argue that ski-shaped marginal cost functions were atypical.

**Conjecture Concerning Stigler’s Reasoning**

Why would a competent theorist deviate from the logic in his own journal article and dismiss empirical results from reputable researchers? I conjecture that Stigler’s defense of a U-shaped marginal cost function reflects his desire to discredit mark-up pricing models for fear that they might support the belief that the division of income between labor and capital was determined by malleable institutions rather than by a physical law of diminishing returns. If constant marginal cost prevails up to the point where operations require overtime wage premia, students might think that constant marginal cost is normal, and even if premia are frequently paid, students might wonder how their costs could enter a firm’s price-output decisions if the amount of overtime will not be known until after the transaction is completed. Consequently the ski-shaped cost function implies that manufacturing prices will usually be set by adding a markup to standard unit direct cost, allowing room for belief that the magnitude of the markup may be influenced, at least in the short run, by institutional forces (Robinson 1961).

8. Kahn’s Cambridge Fellowship Dissertation describing marginal prime cost curves in cotton milling and coal mining which were shaped like a reversed-L was supervised by Keynes and presented to the Electors in 1929 but not otherwise published until 1983, in Italian translation (see Maneschi, 1988). The English original has just been printed (Kahn, 1989); if it were not for this long delay it would be tempting to infer that Boulding’s discussion of a “cost ladder” (1948, 485) and Stigler’s rebuttal thereof (1951, 167) were influenced by Kahn’s work.
One of the critics of both neoclassical theory and capitalism was Michael Kalecki (1939), who argued that in the industrial sector short-run marginal cost was horizontal up to "practical capacity" and that the gap between price and average variable cost was determined by "the degree of monopoly" (similar to Karl Marx's "rate of exploitation") rather than by a law of diminishing marginal productivity. Stigler does not explicitly rebut Kalecki or Marx, but his interest in defending neoclassical distribution theory is apparent in his doctoral dissertation which devotes much effort to rebutting fixed-coefficient production functions (which might, under certain circumstances, make marginal productivity indeterminate); he even rebuts the proposition that there is a fixed ratio of yolk to white in eggs (Stigler 1941, 151–53, 165–71, 236–42, 367–68). I infer that Stigler's enthusiasm for neoclassical distribution theory induced him to exaggerate the adaptability and indivisibility of the manufacturing plant in the short run so as to discredit the view that industrial prices were set by adding standard markups to prime costs. 9

Stigler might have followed Marshall and argued that some departures from marginal cost pricing are socially beneficial and harmonious with long-run competitive equilibrium. J. M. Clark took this avenue; he accepted the long-run validity of the view that income distribution is determined by marginal productivities but argued that marginalistic maximizing models were inadequate to explain short-run price/wage behavior because of the fixedness of production coefficients and the inability of accountants in multiproduct firms to trace home the costs of each unit of output. For survival, a firm's price must usually exceed short-run marginal cost and it must pay a wage-rate less than the (constant) short-run marginal product of labor (Clark 1923, 474–75; 1940, 250). Clark did not think such a situation necessarily represented monopoly power or exploitation of labor in any meaningful sense of the terms, but it could justify informal understandings on prices and collective bargaining to set wage-rates; he coined the term "workable competition" to describe conditions which deviated from perfect

9. To perceive Stigler's hostility toward models of inflexible markups in manufacturing, compare his recollection (Stigler 1988, 55–56) of Gardner Means' concept of administered prices with Means's (1935, 408–9; 1936, 23–35; 1939, 140–45) original thesis. Note also that Stigler's extensive effort to empirically refute the administered price thesis gathered no evidence on input prices, so that the modest changes which Stigler and Kindahl (1970) found in output prices may well have been due to changes in input prices rather than to the changing markups predicted by Stigler's textbook description of competitive cost-price behavior.
competition but which were superior to any feasible alternative (Clark 1940). Stigler objected to the imprecision in Clark’s concept: “The workably competitive industry, like the workable wife or the workable university, is a concept which is unlikely to assist in the study of the subject to which it pertains” (Stigler 1956, 505). Stigler’s appreciation of precision led him to base his price theory text on the assumption that “all economic units possess complete knowledge” (1946, 21); if this assumption were valid then (as in Walras) there would be no meaningful distinction between prime costs and overhead costs, and prices could be varied so as to always maintain full utilization of capacity without queues or back orders. In contrast, Clark describes a firm which is unable to achieve an exact match between output and capacity, and so is unable to operate with a plant of the “correct” size which would make short-run marginal cost equal long-run marginal cost as envisioned in the envelope theorem. Such recognition of imperfect information and socially desirable excess capacity makes models fuzzy and unattractive to those who seek rigorous foundations. For example, Samuelson (1947, 241–43) belittles the views of Marshall and Clark by emphasizing the mathematics of the envelope theorem while ignoring the problems which arise if demand is stochastic and the plant is unadaptable; his exposition must have convinced many graduate students of the 1950s and 1960s to shun “the fallacious belief that long run marginal cost ‘inclusive of changes in long run variable factors’ is greater than short run marginal cost” (243). U-shaped curves have charm, especially when combined with the envelope theorem, and as theorists shifted from graphical analysis to calculus it was natural for them to adopt the U-shaped marginal cost curve due to the extraordinary difficulty of writing a polynomial function whose first derivative is constant for a wide range, then rises. So concern for neoclassical distribution theory was not the sole reason for wide acceptance of Stigler’s views, but such concern apparently motivated Stigler to promulgate them vigorously.

**Conclusion**

Stigler’s microtheory text drove a wedge between economic theory and cost accounting when he rebutted the views of Marshall and Clark and set aside the findings of Dean. It is true that work which is partly harmonious with the older views may be found at higher levels of micro
theory. Telser (1987, ch. 5) uses game theory to show why cooperative restrictions on egoistic maximization are needed to hold price above short-run marginal cost in order to achieve Pareto optimality under conditions similar to those envisioned by Marshall and Clark.10 Tirole (1989, 256–61) uses game theory to show how it is advantageous for a firm to establish a reputation for cooperative behavior in an uncertain environment, and Scherer (1980, 199) observes that “firms in high fixed cost industries seem to exercise extraordinary restraint in their pricing actions.”11 One may hope that required theory courses incorporate such material, but there are limits to the absorptive capacity of students, so I fear that Stigler’s propositions concerning cost functions will continue to impede recognition that the typical manufacturing price must conventionally be maintained substantially above apparent short-run marginal cost in order to earn the normal rate of return on capital.

Ironically, Stigler’s success has pressured economists to apply the label “monopolistic” to every market in which a seller is unable to sell all he/she wishes to at the prevailing price. This practice impedes communication because it uses a word which has inescapable pejorative connotations to describe market structures which may well be socially optimal (i.e., best feasible). A better alternative is to admit that unadaptability and divisibility are the appropriate assumptions for the short-run cost function in manufacturing, and to accept the classical corollary that the relevant cost (and the competitive supply price) of a unit of output is equal to the sum of the costs of the inputs needed to produce it, with recognition that when output is stochastic there is some inevitable imprecision concerning capital input requirements and the proper time sequence for the rental price of capital equipment. This framework provides a definition of competitive price which is compatible with the views of Walras, Marshall, Clark, Kahn, and cost accountants; it allows input coefficients to change in response to exogenous changes in factor supply conditions (such as innovation, capital accumulation, or changes in the labor force) without postulating that factor substitution is used to meet fluctuations in demand.

10. Telser’s model has transportation cost (instead of stochastic demand) as the factor which makes it socially optimal for firms to operate with average cost exceeding marginal cost.

11. Carlton (1989, 931–40) also explains non-market clearing behavior in terms of factors other than monopoly power, but his discussion is tangential to the issue at hand because he does not examine the behavior of input prices or unit profit margins.
Within this framework stability of price-cost margins in workably competitive industries may be seen as unremarkable, and their actual movements may be empirically analyzed without the encumbrance of misleading preconceptions derived from inappropriate production and cost functions.

References


