Classical and Neoclassical Elements in Industrial Organization

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The treatment of profits in neoclassical theory has long been the object of sustained criticism from many quarters (Sraffa, 1960; Mars, 1981; Pasinetti, 1977). The debate has remained for the most part theoretical. This may leave the impression that what is involved is simply a clash of incommensurable paradigms. But in fact the neoclassical notion of profit bears little relationship to the behavior of real profits in real economies, and has proven to be a poor guide to empirical research. This article will try to show this by examining industrial organization studies of monopolistic and competitive pricing. Our analysis will focus on the central debates of the 1950s, 1960s, and 1970s which formed the theoretical basis of the modern industrial organization paradigm. We will argue that despite claims to the contrary, and often unknowingly, the majority of these studies adopted a mixture of both classical and neoclassical elements. We will try to show that the lack of a firm theoretical grounding has led to three types of confusion in this literature. First, there is a lack of clarity concerning what measure of profitability should be equalized in competitive equilibrium. A debate has developed concerning whether the rate of profit, total profit, or the profit margin, is the appropriate variable to study. Second, the industrial organization approach to monopoly and competition has never adequately resolved over what period of time profit rate differentials must be studied. In this regard, Yale Brown’s criticism of the short-run nature of early neoclassical structure studies is discussed. Third, we will argue that from a classical point of view, firm studies of profitability which draw conclusions for industry phenomena have been misguided. Harold Demsetz’s work on concentration and efficiency will be referred to as an illustration. We will conclude by questioning the practicability of a purely neoclassical grounding for industrial economists, since they have been impelled to abandon this approach in their investigation of reality.

THEORETICAL FOUNDATIONS

In order to understand the theoretical basis of applied studies of monopoly and competition we will first consider the classical and neoclassical theories of price as comparable paradigms. We will try to formulate the empirical guidelines that each theory offers the applied economist. When approaching the neoclassical view we will consider it through the eyes of the industrial organization field, which has tried to modify its understanding of neoclassical economics to make it more applicable to empirical research.

Classical Theory

The classical theory of price can only be understood if we bear in mind that the basic classical concept of the firm differs significantly from the neoclassical version. In the neoclassical theory, as we elaborate below, the firm is seen as an agency which hires the factors of production and seeks to maximize the size of profits defined as the difference between total revenue and total costs. Only in more elaborate recent models are such features as credit rationing and asymmetric information introduced. The basic concept of the firm in classical theory, by contrast, assumes that the firm owns a finite amount of money capital which it seeks to expand as fast as possible; financial markets, and interest as the opportunity cost of capital, are introduced in the analysis as subsequent refinements. Under such conditions, profit maximization is

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The classical analysis of profit has been described by a number of authors (Elwell, 1982; Dumenil & Levy, 1984; Clifton, 1977; Semmler/Flaschel, 1985). In the long run, in the competitive process there is a mechanism which pushes industry profit rates toward equality and therefore the price of capital across industries to the highest rate of profit. According to the classical economists, in the long run, the prices of capital in those industries with above-average profitability are driven up by competition. In the short run, however, in the model of a distance function, the equilibrium rates of profit remain unequal. The process of competition among industries, i.e., rates of profit on the average conditions of production in each industry:

... [Text continues...]

The real question, however, is not the legitimacy of this kind of formal analysis, but whether real firms and markets are more or less imperfect approximations to particular ideal types, or instances of something different, such as the ideal type in classical theory discussed above.

The polar opposite of perfect competition is pure monopoly. Here the firm equals the industry, so the industry demand curve is directly perceived by the firm. As is well known, in such a situation the marginal revenue curve lies below the demand (average revenue) curve. The effect of the monopoly is to shift the elasticity losses due to departure from perfect competition, it is just as unrealistic as the latter for most industries. It requires a single seller free to set prices at will, with no threat of potential entry by other firms.

Static and Dynamic

The most rigorous version of the model of perfect competition is Walras' model of general equilibrium, which received its highest formal expression in Debreu (1959). In this version of the model, there exists a unique price vector which uniquely clears all markets (both present and future) and achieves a Pareto-optimal intertemporal outcome. A major weakness of this model is that it requires a mythical auctioneer to discover this unique price vector before any exchanges can take place. Once this is done, all exchanges, for instance zero to infinity, take place on that basis.

The model for a competitive market to be judged perfect would require the following additional properties:

1. perfect competition,
2. instantaneous equilibrium,
3. zero transactions costs.

While all these conditions are fulfilled for an entire perfectly competitive economy, all firms earn zero economic profits, since the presence of positive profits would mean that some reallocation of productive resources (by existing or new firms) could improve the overall efficiency of the economy. The latter is not possible in equilibrium conditions (A) through (C).

Neoclassical economists are fully aware of the "unobtainable" of such a model of market behavior of firms. They correctly maintain, however, that scientific knowledge largely consists of deriving such abstract models as the way of uncovering the fundamental structure of reality:

... this competitive story represents a limiting case of market behavior that is very useful for economic analysis, just as the study of a frictionless system is useful for a physicist. (Varian, ibid)

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Thus, this model does not admit of any dynamics whatsoever: no exchanges take place until the economy achieves equilibrium, and once it does all exchanges are set for all time. This is even stronger than saying that a changing economy is in equilibrium at every instant: it says that there is only one...
entry or exit no longer take place, profits are zero for all firms in that industry. In neoclassical theory, therefore, there are no exogenous or heavy discounting of expected profit tax. A long-run equilibrium. This unverified assumption has led to confusion in the literature when contrasting the results of firm and industry studies, as we discuss below.

**Theoretical Complications in Industrial Organization**

In industrial organization, on the other hand, there exist no generally agreed-upon basic models of economic behavior, and the underlying assumptions are often contested. . . . In industrial organization, investigators simply do not have the same degree of confidence in their theoretical constructs as exist in other areas (Compario: 1971, p. 405, 407).

In the 1950s, in order to formulate empirically testable hypotheses, the industrial organization field bypassed the neoclassical notions of perfect competition or workable competition, in favor of the structure-conduct-performance paradigm. This framework was developed as an analytical generalization of purely descriptive industry studies done in the past (e.g., Berle & Means, 1932, and cases studies by Edward Mason's Harvard group during the last 30% and early 40% of this paradigm, market structure (primarily the degree of concentration and barriers to entry) and conduct (firm strategies regarding product innovation, advertising, R & D, etc.) determine performance (allocative and productive efficiency). This paradigm, it was hoped, would allow relationships to be established empirically, thus avoiding the problems of theoretical specification.

Unfortunately, the structure-conduct-performance paradigm cannot solve the problems industrial organization faces because it still requires implicit notions of the firm and its objectives, of markets, and of competition. Because of the lack of realism of these concepts in neoclassical theory, applied industrial economists have been forced to rely on ad hoc hypotheses which are in greater agreement with economic intuition and actual business practices. This practical approach to theory has unaccountably led the industrial organization field back to elements of the classical theory of competition. This is the context in which we wish to demonstrate below, focusing on three issues: the rate of profit, long-run dynamics, and the theoretical distinction between firms and industries.

**DIFFERENCES OVER THE PROPER MEASURE OF PROFITABILITY**

Profit-rate differentials have become a primary indicator of allocative inefficiency and have been related to market structure in a large number of studies. Yet, there is simply no way to theoretically derive the link between allocative efficiency and the rate of profit on assets within neoclassical economic theory, if by profit we understand economic profit in excess of imputed interest. As is well known, neoclassical theory only establishes a link between monopoly and profit margins (profits/assets), where the latter depends on the elasticity of demand for the product.

In neoclassical theory, the existence of any economic profits in excess of all costs (including the cost of capital services) is inconsistent with the efficient allocation of resources which only obtain in perfect competition. This is due to the neoclassical view of firms as ... essentially brokers between resource owners and consumers” (Seligman, 1957. In this view, the rate of return on capital (the rate of interest) is equalized throughout a competitive economy. However, there is no concept of the profit rate as profit relative to some asset value, since capital in the neoclassical view is simply another factor of production whose services are hired. The equalization of rates of profit between industries is therefore explicitly assumed to be an equilibrium.

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By rate of return Steiger means the rate of profit on total assets—a notion of rate of return which is classical. Like Bain, rather than actually measuring the extent to which industries are gravitating around an equal long-run average, Steiger is concerned to measure the relationship between concentration and profit rate for a ten-year average. His results are unimpressive and he concludes against a strong version of concentration-determined differential profit rates. What is interesting for our purpose, however, is the disagreement between Bain and Steiger over what is the proper measure of profitability (which (a) should be equalized under competitive conditions, and (b) should be used as a measure of monopoly power.)

The Bain and Steiger studies are the most famous of the market structure/profit rate studies and they initiated a large literature on the topic. This literature, in general followed suit in adapting the classical version of competition, although there are many subtle differences between the various authors. Important among these is the study by Michael Mann in 1966, since this paper introduced the study of barriers to entry into empirical market structure/profit rate analyses. Mann also explicitly adopted a rate of profit for his analysis. Mann found a relationship between high-profit-rate industries (for the years 1950-1960) and a complex set of variables which he called “barriers to entry.”” Mann’s study is classical in the sense that barriers to entry are also an important part of the classical discussion. Smith, for example, cites state interference and lack of information as a barrier to competitive equilibration (Smith, 1965, p. 61). Mann also often discusses noncompetitive resources as a barrier to the free flow of capital.

David Qualls has been prominent in the exception to have addressed the classical notion of equalized profit rates as an indicator of monopoly. According to Qualls, microeconomics requires the analysis of excess profit or unequal profit margins rather than profit rates, and he is critical of Bain and others for having introduced the concept of the rate of profit. He writes for example:

"The consideration that rates of return on equity may be inappropriate indicators of price-cost margins could conceivably be an important limitation of the previous studies. All the theoretical segments developed in performance actually relate to the relationship of long-run price-economic cost margins to concentration and would not necessarily correspond to a ranking of firms based on excess or economic profit rates on equity.... (Qualls, 1972, p. 148)"

Quals refer the computation in the Bain and Mann articles using the same industries, time periods, and definitions of concentration and barriers to entry, but against profit margins rather than profit rates. His main concern was to study whether the same relationships which Bain and Mann found would also hold. He found that the Bain and Mann results (a weak significant relationship between concentration or barriers to entry and a measure of the profit rate) also held when the "excess profit margin" is substituted for the rate of profit.

In the classical treatment of competition, there is no a-priori appropriate choice of a definition of the rate of profit. Profit can be defined broadly or can be measured after taxes or after net interest. Capital costs can be measured in different ways, as equity or total assets. It can include or exclude inventories, and can be measured at book value or replacement cost. What is clear in the classics is that what investors maximize is the return on total investment, for which the rate of profit is an empirical proxy. A whole range of uncharted waters concerning the best measure of the rate of profit exist. But without knowledge of this issue, it is impossible to determine whether profit rate differentials are the result of bias in measurement or some real economic process. These issues have only begun to be addressed (see Glick, 1985, Dunnen, Glick, Rangel, 1986). An important obstacle to this research is the need to maximize of total profits is the objective of firms, a view which is constantly finding its way back into the literature.

LONG-RUN VERSUS SHORT-RUN PERIODS

Most economists doing empirical work, following Marshall, distinguish between short-run and long-run equilibrium, and expect the economy to be at least sometimes in a long-run disequilibrium position. A careful reading of the literature, however, reveals the unacknowledged presence of classical notions of the short and long runs among the Marshallian dissercion. As discussed in section I, the classical view of long-run equilibrium is that it is a regulator of actual market conditions, the latter fluctuating around it, but never converging completely to it, due to the constantly changing position of this equilibrium. The Marshallian view was contrasted as one in which a disturbance from equilibrium (an exogenous shock, like a crop failure) leads to a gradual return to equilibrium conditions in a smooth monotonic convergence.

In Bain’s study we find an unclear mixture of both views:

The a priori model from which the concentration-profit hypothesis is drawn really refers to firms and industries in long-run static equilibrium... The predictions drawn from this model may be extended to actual time processes situations by arguing that what would hold for long-run equilibrium should also tend to hold for average performance over time, although with numerous sources of dispersion from the steady-state tendency that identified (Bain, 1951, p. 38).

By contrast, Steiger’s view of competition is one of industry profit rates gravitating around an equal center of gravity, although he never distinguished his classical view from the Marshallian one:

The role of the word “tendency” raises further issues. Economic analysis tells us that the rates of return in competitive industries will be strictly equal (in a sense to be noted shortly) in long-run equilibrium, that is, after a period long enough to allow (enough) entrepreneurs to move into the industry they favor and operate at the rate of output they desire. But this very concept of long-run equilibrium reminds us that, in a world where all events are not perfectly anticipated, there will be a stream of associated disturbances that call for a stream of changes in the allocation of resources: unanticipated shifts in consumers’ demands; the impact upon international markets of wars and political events; the irregular march of major advances in technology, and others (Steiger, 1963, p. 53).

Mann, like Bain and Steiger, unconsciously adopting the classical paradigm of competition when discussing price theory.

The emphasis on the long-run recognizes that actual profit rates may differ from normal in the short run for reasons independent of the number of sellers, e.g., changes in demand or cost which raise or lower profits until the allocation of resources pushes the industry toward long-run equilibrium (Mann, 1966, p. 296).
The keynote role of the long run in competition was made an issue of contention in this literature by Yale Brozen's response to the report to President Johnson's task force on antitrust policy. (Mueller, 1964, pp. 8-9). Included in this report was the "Concentrated Industries Act" which would have given antitrust a mandate to displace the market share of firms in concentrated industries, and, by doing so, it was claimed, increase economic efficiency. As evidence supporting this proposal, the Bain, Stigler, and Mau articles were primarily referred to. Brozen's argument, embodied in what has become known as the "disequilibrium hypothesis," was that previous studies (looking concentration to profit rates were unfaithful to their own theory). Brozen criticized the short-run nature of these studies on the grounds that the equilibration of profit rates is a long-run process. Since only the classical theory of competition is long-run in nature, Brozen was criticizing this deviation from classical economics. Specifically, "his disequilibrium hypothesis" maintained that because of technological change in some industries or the relative newness of a particular product, certain industries should be expected to have higher rates of profit than others. By allowing a particular slice of time, researchers had been capturing only a phase in the historical evolution of industrial profitability which should eventually converge toward an average.

Indeed, Brozen was taking economists to task far simply stating the classical hypothesis without taking them seriously in the design of their studies. He is very clear that, in the short-run profit rate differences should exist and that previous studies had not captured long-run equilibrium. However, he is unclear concerning the role of structural change and perturbation. It seems that, in his view, such disruptions will only result in a temporary disequilibrium rather than a permanent gravitation as in the classics. Thus, even Brozen vacillated at times between classical and Marshallian characterizations of the role of the long run.

In order to demonstrate his hypothesis, Brozen re-examined the data used in the Bain, Stigler and Mann studies. He argued that if these studies truly captured a relationship between profit rate and collusion, then the concentrated industries should sustain higher than average profit rates. If, however, it is disequilibrium which is being observed, then over time there should be some movement toward the average. Considering the Bain data, Brozen found that:

In the most concentrated half of Bain's list of forty two industries, twelve "March" above average (1953 - 1957) in average rate of return in the period he examined. None fell below average rate. The ratio of average returns to market returns in the most concentrated industries declined to 1.6 in 1957 from 1.8 in 1953. This was close to the average return industries, while rate declined to 1.2 in two (Bain, 1969, p. 284-285).

Brozen also found the same type of movement among the low concentration industries. Most of the above average rates fell, while most of the below average rates rose. He was careful to note that his hypothesis did not mean that all of the industries converge, since a certain degree of perturbation could occur. But he believed, as a general rule, that large groups of industries should be expected to converge.

Brozen re-examined the same results on the Stigler and Mann data as well. In the Stigler, he showed that when the time period was extended there was a tendency toward profit rate convergence. In the Mann literature, he showed that in both cases, weakened or eliminated the statistical significance of the relationship found between market structure and profit rates. In a defense of the deconcentration proposal, MacAvoy, McKibben, and Breston attempted to construct a sub-set of the Bain data which they held insisted of "high and stable" profit rate industries (MacAvoy, McKibben, and Breston, 1971). If this non-converging group was released to concentration, then the Brozen criticism might not be generally valid. Such a relationship, to some extent, was found. Brozen responded by again demonstrating that even this smaller sample of high profit industries tended to converge over time. Since the sample never actually reached the average level, the debate eliminated in a difference of interpretation. Nevertheless, the Brozen point was well made. Thus industrial organization literature had adopted the long-run classical point of view, but they had not remained faithful in their

methodology by adopting short-run regression methods (cross-sectional regressions using one to five year averages).

In subsequent work on profit rate and market structure, the Brozen criticism seems to have been lost. The notion that in any single point in time disequilibrium will prevail has been largely ignored, as contemporary market structure/profit rate studies have utilized more sophisticated econometrics and greater industry detail, but they have not abandoned short-run cross-sectional regression analysis. Unfortunately, neither Brozen nor other applied economists have followed up the insights gained concerning long-run equilibrium. Such a criticism would have never even been necessary within a self-conscious, classically-informed applied research program, since the concept of gravitation necessarily implies long-run measurements.

FIRM VERSUS INDUSTRY PROFITABILITY:

A last confusion in this literature is the lack of a clear understanding of the different roles played by firms and industries in competition. As mentioned above, the classics, and in particular Marx, are quite explicit concerning this point. General equilibrium theory often treats the two in an identical manner, and in the empirical literature the issue often lacks clarity. Harold Demsetz, for example, has argued that the profit-rate concentration relationship is a natural result of the greater efficiency of large firms, and therefore, is not an effect of collusion. He writes, for example, that:

"It is important to note, however, that there are reasons other than uncompetitive market power for expecting a positive correlation between profit rate and concentration. Some market concentration and some correlation of concentration with rate of return should be expected from a workable incentive system that rewards superior performance. Patents, copyrights, or licenses are likely to produce such a correlation as a result of socially desirable superior performance. Superior abilities in lowering cost or in improving products, even when unappreciated, are also likely to yield such correlation for non-trivial periods of time. (Demsetz, 1973a, pp. 19-20)"

In order to show that this was the case, Demsetz examined the correlation between concentration and rates of return of large and small firms. In particular, he showed that although large firms in concentrated industries tended to have high rates of return, smaller firms did not.

No positive correlation between rate of return and concentration seems evident for firms under 50,000,000 dollars in asset size, and the smallest asset size classification under 500,000 dollars, shows evidence of a negative correlation. (Demsetz, 1964, p. 38)

Demsetz also found that the change in concentration was related to the change in large-firm profit rates but not to small-firm rates of return. He concluded that this is a result of the fact that more efficient large firms tend to increase industry concentration. Thus, superior performance of large firms led to both higher rates of return and concentration. But here he means higher industry rates of return. Such a proposition is contrary to the classical analysis. As was already argued in the first section, it is the case that large efficient firms can increase their market share and therefore the degree of concentration in a particular industry, but for "non-trivial periods of time" (Demsetz) such a situation can not be responsible for higher industry rates of profit. Superior performance of an individual firm increases its rate of return, according to the classics, at the expense of other firms in the same industry, but it cannot raise the entire industry's rate of profit. Demsetz's own data shows this, since industries whose large firms had higher profit rates showed no increase in industry rate of profit (Demsetz, 1973a, Table 2). This perplexed him:

"Since a larger fraction of industry output is produced by larger firms in the more concentrated industries, these industries should exhibit higher rates of return than other industries... (However) in table 2, industry rates of return are constant [in normal levels] even for concentrated industries in which large firms continue to perform well. (163)"

Within a classical perspective, however, this result is precisely what would be expected.
CONCLUSION

We have shown above that familiarity with the real behavior of firms and markets led economists working in the industrial organization field to at times develop ad hoc categories incompatible with neoclassical theory, and at times to misinterpret data due to the lack of a dynamic theory or a theory of inframarginal profits. To the extent that this behavior was made in interpreting the empirical results, we saw that classical concepts were unconsciously being reintroduced. What we broadly refer to as classical economists have long been critical of the neoclassical theory's notion of profits and its lack of a realistic theory of dynamic adjustment. What this paper shows is that these theoretical shortcomings have practical consequences. The record of applied industrial organization shows a field where applied researchers are cut adrift as a result, and are forced to make do as best they can. In the language of paradigms, as long as neoclassical theory remains dominant, these results from industrial organization will be seen as "anomalies." Should that dominance fade, however, they will be retroactively seen as evidence of the inadequacy of the old paradigms.

REFERENCES


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NOTES

1. The work of the "new" industrial organization school which has emerged in recent years (Jacqueline, 1987) is beyond the scope of this paper.
2. In this article we use classical to mean the concepts of the firm, industry, and competition found in Smith, Ricardo, Marx, and their current elaboration, as outlined below.
3. We shall use letter that such empirical basis breaks down when the firm has uncontrolled access to capital markets.
4. See also: (1993), p. 40. The distinction between perfect markets (not necessarily competitive) and perfectly competitive markets follows the original discussion in Stigler (1977).
5. The distinction (ii) needs to be interpreted as including perfect foresight (i.e., no uncertainty) when dealing with intertemporal equilibrium.
6. Note that by "classical" we have in mind the Weichand (or even Newtonian) notion of the limiting case governing the behavior of actual entities in the real world. There is no implication here of a normative basis.
8. There has recently been a recognition of this concern, and an attempt to bridge the gap between Marabilian dynamics and Walrasian general equilibrium in Norwich and Sonnenschein (1987).
9. Note, however, that commonplace marginal rates and positive profits—it does not imply maximizing profit (defined as price minus average cost).
10. We of course exclude the cost of capital (i.e., some interest rate) from the expected revenue level.
11. "Profit rates, at least in stable profitability or risk recovery, have come to serve as a sort of thermometer to evaluate market power." (Wein, 1971, p. 371.)
12. Barriers to entry are defined as a combination of economies of scale, product differentiation, capital requirements, and control of scarce raw materials.
