Classical vs. Neoclassical Conceptions of Competition

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Abstract

This article discusses two major conceptions of competition, the classical and the neoclassical. In the classical conception, competition is viewed as a dynamic rivalrous process of firms struggling with each other over the expansion of their market shares at the expense of their competitors. This dynamic view of competition characterizes mainly the works of Smith, Ricardo, J.S. Mill and Marx; a similar view can be also found in the writings of Austrian economists and the business literature. By contrast, the neoclassical conception of competition is derived from the requirements of a theory geared towards static equilibrium and not from any historical observation of the way in which firms actually organize and compete with each other.

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JEL Classification Codes: Classical Competition, Regulating Capital, Incremental Rate of Return, Rate of Profit, Perfect Competition.

1. Introduction

This article contrasts the classical and the neoclassical theories of competition, starting with the classical one as this was developed in the writings of Smith, Ricardo, J.S. Mill and more explicitly analyzed in Marx's *Capital*. The claim that this paper raises is that the classical conception of competition despite its realism was gradually replaced by the neoclassical one, according to which competition is an end state rather than a description of the way in which firms organize and actually compete with each other. In fact, most of the phenomena commonly associated with real life competition, such as for example aggressive price cutting, concentration of capital, uncertainty, and the like, in the neoclassical approach are theorized as deviations from what competition ought to be, that is, perfect competition. Perfect competition, is always in the background, when neoclassical theory addresses issues of industrial organization or government regulation of industry and the various market forms, such as monopoly, oligopoly and the like are literally derived from the perfectly competitive

model. By contrast, classical theory views these "deviations" as precisely the expected results of the actual operation of competition, as a process of rivalry where firms fight with each other in their incessant struggle for survival.

The remainder of the article is structured as follows: Section 2 discusses the classical approach to competition as articulated by Smith, Ricardo and J.S. Mill. Section 3 focuses on the development of the neoclassical conception of competition and discusses the phenomena that within this theory would constitute *prima facie* evidence of the lack of competition as a description of a situation rather than as a rivalrous process. Section 4 shows that the same phenomena that would indicate the presence of monopoly or power of firms over market forces, in Marx's analysis — which is within the classical approach— are precisely the results that one would expect from the operation of capitalist competition and the tendential equalization of the profit rates across industries. Finally, Section 5 provides a summary and some concluding remarks.

2. Classical Conception of Competition

Classical economists viewed competition as the mechanism that coordinates the conflicting self-interests of independently acting individuals and directs them to the attainment of equilibrium in a dynamic sense of the term, that is, a never-ending process of elimination of any excess profits or losses and the tendential establishment of natural prices as the centres of gravitation of market prices. This is the reason why Smith notes that despite the fact that each individual is pursuing the satisfaction of his own self-interest, nevertheless "is led by an invisible hand to promote an end which was no part of his intention" (Smith, *Wealth*, p. 456). J.S. Mill is more explicit about the role of competition as the coordinating mechanism, which enables the study of economic phenomena in a rigorous and therefore scientific way. He notes:

> Only, through the principle of competition has political economy any pretension to the character of science. So far as rents, profits, wages, prices, are determined by competition, laws may be assigned for them. Assume competition to be the exclusive regulator, and principles of broad generality and scientific precision may be laid down, according to which they will be regulated. (J.S. Mill, 1848, p.147)

Although from the above quotation, one cannot derive exactly how J.S. Mill defines competition, nevertheless he argues that through competition both natural

prices and incomes can be determined in a rigorous way and what is more important "independently of people's will"; that is, J.S. Mill explicitly recognizes that in the economy there are in operation objective mechanisms (or "laws") that can be the subject of abstract theorization. Classical economists described competition as an endless rivalrous equilibrating process and not as an end-state or a state of affairs as is portrayed in neoclassical economics. For instance, Smith describes this rivalrous price-cutting process through which capitals (firms) are in constant pressure to innovate. Smith notes,

> Competition of producers who, in order to undersell one another, have recourse to new divisions of labour, and new improvements of art, which might never otherwise have been thought of. (Smith, *Wealth*, p.706)

Furthermore, in this competitive process actual prices are attracted to their natural ones, and by doing so the rate of profit together with wages and rents (in the case of agricultural products) gravitate towards their normal analogues. The condition *sine qua non* for the attainment of these normal positions of the economy is the free mobility of capitals, or what Adam Smith calls "perfect liberty". Notes Smith,

> Every man, as long as he does not violate the laws of justice, is left perfectly free to pursue his own interests in his own way, and to bring both his industry and his capital into competition with those of any other man. (Smith, *Wealth*, p. 687)

Again Smith refers this time implicitly to the "invisible hand", when he points out that competition essentially directs the actions of each individual pursuing his own self-interest to promote society's welfare, even though this is not part of his intentions,

> Every individual is continually exerting himself to find out the most advantageous employment for whatever capital he can command. It is his own advantage, indeed, and not that of the society which he has in view. But the study of his own advantage naturally, or rather necessarily, leads him to prefer that employment which is most advantageous to the society. (Smith, *Wealth*, p. 338)

However, classical economists in general were not particularly clear as to the requirements of competitive behaviour and how it was affected by the number of participants. Thus although competition was conceived as a rivalrous process nevertheless often there are statements that could be interpreted as supporting a

quantitative, and therefore neoclassical perspective of competition. A characteristic example is the following quotation from Smith

> The quantity of grocery goods, for example, which can be sold in a particular town, is limited by the demand of that town and its neighbourhood. The capital, therefore, which can be employed in the grocery trade, cannot exceed what is sufficient to purchase that quantity. If this capital is divided between two different grocers, their competition will tend to make both of them sell cheaper than if it were in the hands of one only; and if it were divided among twenty, their competition would be just so much the greater, and the chance of their combining together, in order to raise the price, just so much the less. Their competition might, perhaps, ruin some of themselves; but to take care of this, is the business of the parties concerned, and it may safely be trusted to their discretion. It can never hurt either the consumer or the producer; on the contrary, it must tend to make the retailers both sell cheaper and buy dearer, than if the whole trade was monopolized by one or two persons. (Smith, *Wealth*, p. 272)

Hence, one could discern some of the seeds of a quantitative notion of competition. Stigler (1957 and 1987), in particular, read in the above lines the description of the basic requirement of perfect competition, which is that competition is directly related to the number of participants. A closer examination of the above quotation reveals that even in this case competition is fought through the lowering of prices regardless of the structure of the industry, that is, the number of combatants (McNulty, 1967 and Moudud, 2010). Nevertheless, neoclassical authors interpret statements such as the above to mean that in Smith there was an early development of perfect competition, which Smith could not define with the necessary precision, because economic theory was still in its makings and its full development ought to wait until (or even long after) the marginal revolution, as we will see in the next session. But, if only one thinks of Smith's "trifling example" of the pin factory, where there is an ever-present pressure to undercut unit costs by increasing productivity through the division of labour, then by attributing to Smith a neoclassical notion of (perfect) competition is a (neoclassical) perspective-imposed concept. Thus, the above-cited quotation is more in the context of a mercantile economy dominated by trade guilds monopolizing both production (producers) and consumption (shop-keepers) rather than to capitalist enterprises proper operating in towns or cities in

accordance to the mobility of capital and labour.[1] The trouble with Smith, Ricardo and J.S. Mill was that they did not distinguish in any sufficiently clear and, therefore, theoretically adequate way between inter-industry and intra-industry competition; thereby, subsuming the difference of these two distinctive types of competitive behaviour and phenomena into various time spans.

Thus "the law of one price" accepted by both classical and neoclassical economists[2] is supposed to operate in a short time span and since we are referring to the same commodity, it follows that we are necessarily referring to intra-industry competition. By contrast, the attainment of natural prices requires longer time spans, as capital flows in and out of industries tendentially equalizing profit rates and thus this type of competition is between industries. In a nutshell, Smith, Ricardo and J.S. Mill had conceived competition as a process, whose short-run expression was the establishment of an equal price ("law of one price") and unequal profit rates between firms within industries and different prices between industries which nevertheless tend to be equalized, in the long-run, with their natural prices, because of the inflow and outflow of capital ("law of equal profitability"). This becomes particularly pronounced in Ricardo, when he explains the adjustment mechanism of establishing equilibrium (natural) prices between industries:

> There is perhaps no manufacturer, however rich, who limits his business to the extent that his own funds alone will allow […]. When the demand for silks increases, and that for cloth diminishes, the clothier does not remove with his capital to the silk trade, but he dismisses some of his workmen, he discontinues his demand for the loan from bankers and monied men; while the case of the silk manufacturer is the reverse: he wishes to employ more workmen, and thus his motive for borrowing is increased: he borrows more, and thus capital is transferred from one employment to another, without the necessity of a manufacturer discontinuing his usual occupation. When we look to the markets of a large town, and observe how regularly they are supplied both with home and foreign commodities, in the quantity in which they are required, under all circumstances of varying demand […] without often producing

[1] In similar fashion one can interpret the following quotation "competition rages in direct proportion to the number, and in inverse proportion to the magnitudes, of the antagonistic capitals" (Marx, 1867, p. 626), which really refers in the context of a precapitalist society.

[2] For example, Jevon's "law of indifference" (*cf*., Schumpeter, 1954, p.973) and Walras's idea "that each service and each product have only one price in the market" (Walras, 1874, p. 255). In similar fashion, Marshall (1890, p.325) notes that "the more nearly perfect a market is, the stronger the tendency for the same price to be paid for the same thing at the same time in all parts of the market". Hence, Marshall clearly views the "law of one price" as a tendency of prices to crowd near an average price following a distribution akin to normal. In this sense, Marshall remains within the spirit of the classical economists.

> either the effect of a glut from too abundant a supply, or an enormously high price from the supply being unequal to the demand, we must confess that the principle which apportions capital to each trade in the precise amount that is required, is more active than is generally supposed. (Ricardo, *Principles*, p. 90)

In Ricardo the presence of excess profits or losses simply accelerates or decelerates the process of capital accumulation, furthermore the credit system facilitates and enhances the operation of this mechanism and there is no need for entry or exit of firms from other industries. These aspects of competition, however, are confused in Smith's analysis and are not adequately clarified neither in Ricardo nor in J.S. Mill and as we will argue, after our discussion of the neoclassical competition, are explained in sufficient detail in Marx's *Capital*.

3. Neoclassical Competition

The analysis of competition in the neoclassical theory is contained in the model of perfect competition, which describes the ideal conditions that must hold in the market so as to ensure the existence of perfectly competitive behaviour from the typical firm and, by extension, the characterisation of the industry as competitive or not. The model of perfect competition describes a market form consisting of a large number of small —relative to the size of the market— firms selling a homogeneous commodity to a large number of consumers. All market participants have perfect information about the prices and the costs of each good, consumer preferences are given and finally, there are no impediments whatsoever in the mobility of the factors of production. The result of the above conditions is that the producers and consumers — because of their large number and small size— are incapable of influencing the price of the product, which becomes a *datum* for each and every individual firm or consumer in the market. The behaviour of the firms becomes completely passive with respect to the price of the product ("price taking behaviour") and as for the production, the firm simply chooses the level of output consistent with the maximization of profits which is achieved at the point where the price equals with the marginal cost of the product. The same price also maximizes consumers utility and by extension society's welfare. The conception of perfect competition is therefore required for the neoclassical theory to render static equilibrium determinate.

The intensity of competition is directly proportional to the number of producers and, in general, the structure of an industry. In this "quantitative notion of

competition", the firm is conceived as the legal entity which by hiring and organizing the services of the factors of production supplies goods and services in the market. It is important to note that the firm does not own any of the factors of production; it merely hires the services of the factors of production offered by their owners, that is, the individuals. The larger the number of firms operating in an industry the more vigorous is their competitive behaviour and, so is the establishment of a uniform rate of profit across firms and industries. By contrast, the smaller the number of firms in an industry, the more monopolistic or oligopolistic is the form of competition and therefore the higher the inter-industry profit rate differentials. In this non-competitive state of equilibrium, some prices are above the marginal cost, so society as a whole suffers welfare losses from the underproduction and the underutilisation of disposable productive resources. In the neoclassical microeconomic theory, if the firm or the industry displays profits above normal, for a fairly long period of time, they are attributed to imperfections in the operation of the market and thus in the existence of some degree of monopoly.

The concept of perfect competition appears, perhaps for the first time and in embryonic form in Cournot (1838), whose analysis was premised on the maximising behaviour of the participating firms at the point of equality of marginal revenue and marginal cost. Cournot also related the number of firms to the market price, the larger the number of firms the lower their selling price and in the case of "unlimited competition"; that is, when the number of firms becomes infinitely large the selling prices become equal to their respective marginal costs. These concepts were also present in the writings of the other French engineers of the early nineteenth century, who although did not know anything about perfect competition, nevertheless they new pretty well the efficiency gains or losses of the marginal cost pricing and the difficulties in its applications. The often cited didactic example of such inconsistencies has been advanced by Dupuit ([1844], 1969) and is related to the imposition of the correct price of crossing the bridge. We know that the marginal cost of crossing the bridge, other things equal, is zero and so must be the optimal price (toll) of crossing the bridge. But for a price equal to zero, there is no private incentive to build bridges and a positive price (toll) on the other hand leads to resource misallocation and society's net welfare loss. Cournot's and the French engineers' ideas, however, could not attract much attention in the early nineteenth century

because of the absolute dominance of classical economics and their view of competition as a process of rivalry and not as a static situation.

The neoclassical description of competition as a state rather than as a process of rivalry is far from the harsh reality of the results of competitive behaviour as is well known from the economic history of the last quarter of the nineteenth century. More specifically, the depression of 1873-1896 intensified price cutting behaviour and led to the elimination of a large number of weaker firms, massive unemployment and the concentration and centralization of capital. It has been observed that in dismal situations such as those of depressions, people, often, distant themselves from the harsh reality of the present and start fantasizing idealised situations. Clearly, an idealized situation is where firms are pictured as being independent of each other and each and every one of them is impotent with respect to the prevailing price. Hence, the law of one price coupled with the incapacity of firms to set prices combined with the lack of any mechanism under which firms become more efficient —such as for example, through innovations— lead to the deprivation of firm heterogeneity. Consequently, as all firms in the industry share the same technology producing a homogenous product and each and every one of them possesses the same tiny market share and, therefore, there is no motive what so ever for firms to enter or exit the industry because all of them are earning the same rate of profit. Furthermore, the notion of perfect competition fits perfectly with the core data of the neoclassical theory for its suitability with the way in which technology is integrated in the theory. More specifically, perfect competition secures that firms, from the blueprint of available technologies, choose the lowest cost technology. In this sense, the business enterprise of the real world is not suitable to the neoclassical competition simply because firms in reality are in an inescapable pressure to innovate and, therefore, to introduce cost minimizing techniques in their never-ending struggle to eliminate competitors by cutting unit cost and prices.

Similar conclusions are drawn from Walras's conception of attainment of equilibrium through the mediation of the auctioneer tale. We know that the participants in this model are assumed to act independently of each other and simply react to the prices announced by the auctioneer, who is supposed to know the preferences of all the participants in the market and records their responses to the set of announced prices. The auctioneer accounts for these responses in the new set of prices until all differences are eliminated and trade starts taking place exclusively at

equilibrium prices. Clearly, if the participants in the Walrasian model act differently, then the attainment of equilibrium would not be possible. As a consequence, perfect competition is a *sine qua non* prerequisite in the Walrasian model for the determination of equilibrium prices. In short, the concept of perfect competition is required for the proper operation of the Walrasian auctioneer, because no single participant knows anything more than anybody else and each and every one of them is acting independently of the others. These conditions are satisfied, when there is an infinitely large number of infinitesimally small, with respect to the size of the market, participants. From the above it becomes clear that the givens of the neoclassical theory, that is, the preferences of individuals, their endowments and technological alternatives, when combined, impose a type of competition which cannot be different from perfect competition. Examples that delineate the necessity of perfect competition may include Jevon's consumer's equilibrium position requiring the passivity of consumers who simply react to prices and the same is true in welfare economics and the attainment of Pareto optimality. Wicksteed's product exhaustion theorem of income distribution is another example which is invalidated only in a perfectly competitive environment.

One question is that if each agent is a "taker" of the market equilibrium price and perceives herself as incapable of affecting it, how does price ever reach equilibrium? Here is where the Walrasian auctioneer enters the picture as the *deus ex machina* and fixes the equilibrium prices experimenting with various vectors of possible equilibrium prices and correcting them the economic agents grope towards the equilibrium. Under these circumstance, and as exchange takes place only at equilibrium prices the auctioneer really obliterates any possibility of understanding of the way in which actual markets equilibrate. One consequence of the above is that the classical notion of competition that deals with the attainment of equilibrium as a tendency and in real time was eventually side-stepped for it did not fit with the analytical framework of neoclassical economics, which is oriented towards equilibrium as a state (see also Eatwell, 1981, Clifton, 1977, Blaug, 1999, *inter alia*).

The formal requirements of perfect competition were worked out by Edgeworth (1881), for instance in his model of exchange, where the attainment of optimality requires the passivity of the agents in terms of given relative prices. Naturally, Edgeworth promoted the concept albeit with not much success not only for its patently unrealistic nature as to verge on the outrageous, but mainly because of the

dominance of the ideas of classical economists. Marshall sought to circumvent the problems of acceptance of the new theory by assimilating the classical tradition with neoclassical economics. The classical dynamical process of competition gradually was to be translated into static terms, that is, the number of producers and the type of product may characterize the form of competition. However, even in Marshall's time, perfect competition was not fully formulated into an operational model and this job was accomplished, to a great extent, in Knight's (1921) book, which was essentially his dissertation written under Allyn Young's diligent supervision.[3] Knight in his book described in a comprehensive and meticulous way the requirements of perfect competition that could be used in the real economy. The trouble with such a description, however, was that it could not be easily applied to real economies and this according to Stigler (1957) paved the way for the development and wide acceptance of the notion of monopolistic competition in the 1930s.

The notion of perfect competition and the associated with it Marshallian theory of the firm has been criticized by Sraffa (1925, 1926) who showed that in a partial equilibrium framework one cannot define the usual U-shaped average and marginal cost curves which give rise to an upward slopping supply curve. As a consequence, constant returns to scale appear as the only logical assumption for the neoclassical partial equilibrium analysis of a perfectly competitive firm and under constant returns the given price cannot but coincide with the marginal cost curve rendering thus the size of the firm and its supply decisions indeterminate. Under these circumstances, Sraffa suggested that either one should opt for a general equilibrium approach, which at that time was an exceedingly difficult task to accomplish, or maintain the Marshallian partial equilibrium analysis but discarding the perfectly competitive firm and replacing it by the firm practicing product differentiation operating in monopolistically competitive markets. The monopolistic competition suggestion was picked up a few years later independently by J. Robinson (1933) in the UK and by Chamberlin (1933) in the USA and essentially they were those that launched what came to be called as the "monopolistic competition revolution" in the 1930s. Both authors suggested that perfect competition should be abandoned in favour of monopolistic competition (see Tsoulfidis, 2009 and 2010, ch. 9). Robinson was

[3] Allyn Young is the supervisor of at least two famous dissertations one by Frank Knight and the other by Edwin Chamberlin.

explicit about the marginalization of perfect competition and the generality of imperfect competition, she noted

> it is more proper to set out the analysis of monopoly treating perfect competition as a special case. (Robinson, 1933, p. 250-251)

Although Robinson openly admitted her influence from Sraffa's articles, nevertheless her analysis was based more on the tools of the Marshallian tradition and soon after the publication of her book she essentially abandoned the further development of "imperfect competition" and the associated with it revolution. In fact, she wrote very little about imperfect competition (after the publication of her book) as she lost faith in the concept and her interests diverted to other areas of economics such as the critique of the neoclassical theory of capital and economic growth. Chamberlin, on the other hand, although not willing at all to admit any external influences to his work and especially from Sraffa's articles and the theoretical developments in Cambridge England. In spite of all these, Chamberlin produced a body of work which was much more faithful to Sraffa's suggestion and he managed to develop new analytical tools promoting the concept of "monopolistic competition" until the very end of his life.

The upshot of the monopolistic competition revolution was that (perfect) competition became a special case and imperfect (or monopolistic) competition became the norm. This sparked a debate among neoclassicals; on the one hand, economists mainly associated with Harvard University (Chamberlin, Mason, Galbraith, *inter alia*) argued that actual economic life is in deviation from that described in perfect competition and thus government's role is to correct these imperfections using as a benchmark the perfectly competitive model. On the other hand, economists mainly associated with Chicago University, mainly the trio Stigler, Friedman and Harberger argued that capitalism works and gives rise to results that are approximately those predicted by the model of perfect competition and that monopolistic competition is a much more complex approach (not even a single model) and its complexity is not justified by its predictive content. Thence came Friedman's (1953) famous methodological principle which stated that "a model is

judged according to its predictive content and not the realism of its assumptions".[4] In this context, he used the example of the price effects of an indirect tax imposed on cigarettes which could be predicted with sufficient accuracy using a partial equilibrium framework and the model of perfect competition, although the cigarettes industry possesses the characteristics of monopolistic or oligopolistic competition. This debate in the 1930s and 1940s gave rise to the disciplines of industrial organization and government regulation of industry. By the end of the 1940s or early 1950s the "monopolistic competition revolution" was replaced by perfect competition as the norm until, at least, the second monopolistic competition revolution in the 1980s with the advent of new Keynesian and also new consensus macroeconomics.

In this comeback of monopolistic competition particular attention has been paid in developing more general and realistic models of competitive behaviour and in these efforts game theory became particularly popular, however, till now there is a whole host of game models but none is generally accepted which characterizes the behaviour of a competitive industry. These imperfect competition models were further elaborated so as to become part of new theories of international trade and economic growth. On further examination, however, one discovers that underneath all these imperfect competition models was the fundamental faith in perfect competition. This recourse to game theories is an admission that the usual textbook analysis of competition is far for being satisfactory.

It is important to point out that the dominance of the neoclassical theory in the field of microeconomics is due, at least partly, to heterodox economists. For reasons that have to be explained, many heterodox (radical) economists thought that the model of perfect competition was realistic for analyzing the capitalism of the nineteenth and perhaps early twentieth century, when the (absolute) size of firms was supposed to be small, and, therefore, firms were following market signals simply because they were impotent to change the market outcomes. Many heterodox economists (Kalecki, Sweezy, Foster, *inter alia*) have repeatedly asserted that the last decade of the nineteenth or the beginning of the twentieth century, have marked a new era of capitalism, where a small number of gigantic firms (megacorps) possess power

[4] Stigler (1937) was the first to reject the imperfect competition approach on methodological grounds, although such a rejection is more associated with Friedman (1953) who by popularising this methodological principle so much ended up to associate it with his name.

over the market forces so that they can fix their prices and thus manage to secure a higher than average (competitive) rate of profit.

The problem with this view claiming that firms possess market power is that it does not provide the required evidence. There is no doubt that with the passage of time the absolute average capital requirements of firms have increased, but by no means has this implied that the power of firms over market forces has also increased, because, at the same time, the size of the market has increased immensely. Thus, only a relative with the size of the market comparison of firms might be meaningful and such a comparison is exceedingly difficult for the lack of data. Besides, larger relative size does not necessarily imply higher profitability and this is certainly an empirical question that gave rise to a voluminous literature in the USA and elsewhere. The evidence, to the extent that we know the literature, does not lend support to the view of "market power", especially when the time span of the analysis is sufficiently long.

Schumpeter's (1942) keen analysis was also dismissive of the idea of the existence of a perfectly competitive stage of capitalism, he notes:

> [A]n entirely imaginary golden age of perfect competition that at some time somehow metamorphosed itself into the monopolistic age, whereas it is quite clear that perfect competition has at no time been more of reality than it is at present. (Schumpeter, 1942, p. 81)

Furthermore, Schumpeter (1942, p. 106) characterized such a competitive stage of capitalism as "wishful thinking".[5]

While Schumpeter and also Austrian economists (*e.g*, Kirzner, 1987) are critical of the static conception of competition (either in its perfect or in its monopoly form) and have many interesting insights on the nature of competition as a rivalrous process of discovery in which entrepreneurs seek new profit opportunities in a world of constant change. As a consequence, excess profits are by no means a sign of lack of adequate competition and index of inefficiency, but rather an indication that entrepreneurs are responding to shifting market conditions. In spite of the realism of their premises, Austrian and also evolutionary economists have failed, so far at least,

[5] It is important to stress that Schumpeter is not always consistent with his views on competition as he was influenced by the presence of Chamberlin and other economists at Harvard University that were among the protagonists of the monopolistic competition revolution. Thus, one cannot pinpoint with certainty what exactly Schumpeter thinks, it seems though that he did not completely break with the neoclassical view. For example, he notes: [P]erfect competition is not only impossible but inferior' (*ibid*., p. 106), see also Michaelides and Milios (2005).

to present their views in an accepted and, at the same time, workable and testable model of competition. In what follows, we focus on Marx's work and the post-Marxian discussion, where again competition is viewed along the classical approach and to our view sheds light and helps to the understanding of many of the contemporaneous phenomena.

4. Marx on Competition

In what follows we present Marx's analysis of competition as an extension and further elaboration of the classical conception of competition expounded mainly by Smith Ricardo and J.S. Mill and in general what came to be known as the classical approach to economics. The salient feature in Marx's analysis is that competition is a derived concept and not the starting point of the analysis, which is the expansion of profits as an end in itself (Shaikh, 1980; Semmler, 1984) and therefore the analysis of competition among capitals follows the laws of accumulation of capital.[6] As the units of capital strive to expand their market share, increase production and profits, they must take actions to confront the efforts of other units of capital engaged in similar efforts. This is the reason why Marx argues that the analysis of the laws of accumulation, what he calls the "inner nature of capital" (*Capital*, vol. I, p. 316) precede the analysis of competition. And furthermore, competition of capitals is the mechanism by which the laws of capital accumulation become "felt by each individual capitalist, as external coercive laws" (*Capital*, vol. I, p. 592).

For Marx, competition is envisioned as a turbulent and inherently violent process that resembles, in many respects, actual "war" (Marx, 1847). The market share of firms, for example, is like the territory of countries engaged in war, while technical change is like the arms race, since it is through technical change that firms can lower their unit cost and prices, attack their competitors and gain a larger share in the market for themselves (Shaikh, 1980). The war-like aspect of competition in Marx is discussed in his writings already prior to *Capital* (*e.g.*, Marx, 1847) and also can be found in the writings of Engels, who generalized the rivalrous competition to many aspects of economic life. For instance he notes:

[6] For example, Ricardo begins his analysis of value assuming an equalization of profit rates, whereas for Marx this requires the writing of two volumes of *Capital* first and eight chapters from volume III.

> Competition is the completest expression of *the battle of all against all* which rules in modern civil society. This battle, a battle for life, for existence, for everything, in case of need a battle of life and death, is fought not between the different classes of society only, but also between the individual members of these classes. Each is in the way of the other, and each seeks to crowd out all who are in his way, and to put himself in their place. The workers are in constant competition among themselves as are the members of the bourgeoisie among themselves. The power-loom weaver is in competition with the hand-loom weaver, the unemployed or ill-paid hand-loom weaver with him who has work or is better paid, each trying to supplant the other. (Engels, *Condition of the Working Class in England*, 1845, emphasis added)

In Marx's work, there is a clear distinction of competition between and within industries. For example, he notes:

> What competition, first in a single sphere, achieves is a single market-value and market price derived from the various individual values of commodities. And it is competition of capitals in different spheres, which first brings about the price of production equalising the rates of profit in the different spheres. The latter process requires a higher development of capitalist production than the previous one. (*Capital*, vol. III, p. 180)

In short, competition leads (tendentially) to the establishment of a common rate of profit with different equilibrium prices across industries and a uniform price with differential profit rates between firms in the same industry. In what follows, we present the salient features of these two aspects of competition and their synthesis through the concept of regulating capital.

Competition within industries

Starting with the aspect of competition between firms within an industry (Marx, 1894, pp. 138-39, 178-86, 197-98 and 641-45), firms are viewed as large units of capital, which fight with each other over market shares. Capitals in this war-like competition are successful only by reducing unit costs through innovations usually associated with the introduction of fixed capital. We say fixed capital because through this is achieved the effective division of labour, the increase in productivity, the reduction in unit cost of production which makes possible the undercutting of price and the elimination of competitors:

> The battle of competition is fought by cheapening of commodities. The cheapness of commodities depends, ceteris paribus, on the productiveness

> of labour and this again on the scale of production. Therefore, the larger capitals beat the smaller. (*Capital*, vol. I, p. 626)

Although Marx was writing in the nineteenth-century his analysis begins with large units of capital, which are already in the battle to reduce unit production costs through increasing mechanization. Innovations leading to techniques with lower cost make possible the reduction of the selling price, thereby increasing the market share of innovators. Imitators cannot follow immediately for they are stuck with their fixed capital, which must be kept in operation for a certain period of time in order for their owners to realize its value. The innovators as they increase their capital per unit of output produced will temporarily reduce their profit rates. However, as they reduce the selling price of their commodity and expand their market share, their profit margin on sales increases and gradually their rate of profit becomes the highest in the industry. Eventually, all producers sell the same commodity for approximately the same price, that is, "the law of one price" prevails:

> Competition can only make the producers within the same sphere of production sell their commodities at the same price. (*Capital*, vol. III, p. 865)

It is important to emphasize that the equalization of price within an industry is only tendential, that is, all firms in an industry are likely to sell at approximately the same price, it follows that firms with lower costs will end up earning profit rates higher than those firms with higher costs. The differential profit rates within industries are expected to persist because some of the elements of production, such as, location, climate, natural resources, management and the like, are not easily reproducible and also because of unequal firm innovation and expectations. As a consequence, although both classical and neoclassical conceptions of competition have in common the law of one price, nevertheless the role of this law is entirely different in the two approaches. In neoclassical economics the law of one price is being used to establish firms' homogeneity, whereas in Marx and more generally in the classical approach the same law is being used to establish firm heterogeneity.

Competition between Industries

The first consequence of the analysis of competition between industries is the tendential equalization of the inter-industry rates of profit. Firms in each industry are

assumed to sell their commodities at market prices that tend to incorporate the economy's average rate of profit through the acceleration (deceleration) of capital accumulation in industries with profit rates higher (lower) than the economy-wide average profit rate.

The process of equalization of profit rates implies that each industry's average profit rate should repeatedly cross over with the economy's average rate of profit. In econometric terms, the time series data of the deviation of an industry's profit rate from the economy's average rate of profit should be stationary. In other words, the dispersion of the rates of profit around the average takes place quite regularly and never comes down to zero, which is equivalent to saying that the two rates of profit do not converge to each other. In other words, the two rates of profit, at any moment in time, are unequal to each other and, after long periods, adding up the positive and negative differences we end up with a nearly zero outcome.[7] Put it in statistical terms the variance of the deviations of industries' profit rates from the economy's average should not display any particular pattern.

The tendential equalization of interindustry profit rates implies that the level of profit margins on sales (or on cost) is directly related to capital-output ratios. This result is derived in a straightforward manner from the definition of the profit rate for an industry j we can write,

$$r_j = \left(\frac{S}{K}\right)_j = \frac{(S/Q)_j}{(K/Q)_j} = \frac{m_j}{(K/Q)_j} \text{ or } m_j = r_j (K/Q)_j$$

Where r is the rate of profit, S is the total profits, K is the fixed capital stock, Q is the gross output or total sales, m is the profit margin on sales and K/Q is the capital-output ratio. The above formulation shows the direct relationship between profit margin on sales of an industry j, m_j, and its capital-output ratios $(K/Q)_j$ of the same industry. If there is an equalization of profit rates in the economy ($r_j = r$), then it follows that the profit margins on sales will tend to be proportional to the relative capital-output ratios.[8] Thus the high profit margin on sales (or costs) of capital intensive industries do not necessarily reflect a kind of monopoly power possessed by

[7] For a formal presentation of the long-run equalization of profit rates as a gravitational process see Duménil and Lévy (1987) and Flaschel and Semmler (1987).

[8] For an empirical test of this as well as of other core propositions of alternative theories of competition with respect to the determinants of the profit margins on sales see Shaikh (1980), Semmler (1984), Ochoa and Glick (1992), Tsaliki and Tsoulfidis (1998).

firms in these industries over the market forces, but rather they ascertain the operation of capitalist competition and the interindustry equalization of profit rates to the economy's average.

Another consequence of competition is that for industries with a high capital-output ratio and thus high entry (and also exit) costs, variations in demand will be reflected more in variations in capacity utilization and less in price variations through the acceleration or deceleration of capital accumulation. In other words, when demand changes, industries with a high capital-output ratio tend to absorb demand variations through the necessary adjustments in the rate of capital utilization and employment, and less through price changes.

The observed large amounts of reserve capacity in the capital intensive industries as well as their sticky prices some heterodox economists have interpreted them as indexes of monopoly power, however on closer examination these same phenomena are precisely those that one expects to derive from the operation of capitalist competition. The firms activated in the heavy capital requirements industries tend to maintain relatively large amounts of reserve capacity, but this is quite normal for the size of these firms because it costs them less to accommodate variations in demand by fluctuations in their reserve capacity and not by changes in prices or output. And only in the longer run these large size firms respond to changes in demand by changing prices, profit margin on sales and profit rates. Thus if demand increases the heavy capital requirements industries will experience high profits, as they reduce their reserve capacity and, at the same time, new investment and entry of firms are not easy because of high cost requirements. The converse will be true if demand falls, the increase in excess capacity and the low profits will persist as disinvestment and exit of firms from these industries become costly in the short-run (see also Shaikh, 1980, Semmler, 1984 and Botwinik, 1994).

Once again, the stylized fact of price rigidities in industries with heavy capital requirements per unit of output is not necessarily a reflection of monopoly power, but rather the expected result of the operation of competition. In similar fashion, the profit rates in these heavy capital requirements industries are also expected to display smaller variability than those industries characterized by light capital requirements per unit of output. The intuitive idea is that if more of the variability in demand is

absorbed in output than in price variations, it follows that the rate of profit will be less variable in high capital-output ratio industries than in the low ones.[9]

Regulating capital and its rate of profit

In the analysis of competition in Marx's *Capital*, we are confronted with the following ostensibly contradictory situation, where the tendential equalization of interindustry profit rates must come to terms with profit rate differentials between firms within the same industry. The answer to this seemingly paradoxical result is that the equalization of profit rates does not necessarily refer to the mean rate of profit of all firms comprising the industry; inasmuch as, an industry consists of firms that use the latest technology and ideal location and firms with outdated technology and less privileged and therefore higher cost location. Classical economists were aware of these limitations in the flows of capital, and, therefore, they considered as the relevant rate of profit not necessarily the mean rate of profit but rather the type of capital where expansion or contraction of accumulation takes place. In a sense, classical economists had a view of marginal capital not in the neoclassical (or strictly mathematical) sense of infinitesimally small change, but rather as the type of capital on which changes take place. In Ricardo, for example, this kind of marginal capital is always associated with the worst (or in Ricardo's wording) the "most unfavourable" conditions of production, whereas in J.S. Mill (1848, p.131) with the best, while in Smith the pin factory, "a very trifling manufacturing", as he notes, is certainly not identified with the two extreme situations, but with the one that changes take place and, therefore, shape the rhythm of capital accumulation characterizing the industry as expanding or contracting. The usual example is the case of agriculture, where the most fertile plots of land are already cultivated and are not available for further production. If demand increases, with supply given, then the resulting higher price encourages the gradual cultivation of less fertile plots of land. In this sense, the type of land where expansion of production takes place is the "best available" provided that it secures the normal rate of profit, while at the same time the other types of cultivated lands give rise to excessive profits (deferential rents). Thus in the case of agricultural production the simple average rate of profit would be a poor guide to

[9] Practically, this means that the heavy capital requirements industries will display profit rates that will remain above (or below) the average for longer periods of time than the light capital requirements industries (see also Botwinick, 1994, pp. 143-150).

investment flows as it would be much higher than that of parcels of land, where investment flows actually take place. Ricardo (1821, p. 73 and pp. 86-87) dwelled in the details of this concept of regulating capital which he identified with "the most unfavourable" circumstances in agriculture and mining and he generalized it (to our view not successfully) to the rest of the economy.

In the other industries, the regulating conditions of each industry are determined by exactly the same method; that is, by the type of capital where expansion or contraction of accumulation takes place. The concept is similar to what business people and also input-output economists call "the best-practice method of production". This should not lead to the conclusion that all firms adopt this method of production immediately, since firms operate fixed capitals of different vintages and managers have different expectations about the future direction of demand and profitability. Consequently, firms do not easily switch from one method of production to another. However, new capitals are expected to enter into the method of production, which can be duplicated and, furthermore, the expected rate of profit is attractive enough.

The production method which is targeted by the new entrants is usually the most recent in the industry and not the older or the most profitable. The older methods of production, *ceteris paribus*, will have a rate of profit lower than the average, whereas the most profitable methods of production may not be easily reproducible or their reproduction may be associated with a certain degree of risk, which new entrants may not wish to undertake. Hence, over "a cycle of fat and lean years", that is, a complete business cycle, there is a tendency for the rate of profit to equalize among regulating capitals across industries. In other words, investment flows are not attracted, for example, by the old type of capitals because of low profitability or by the very new type of capitals because they are usually associated with too much risk and employ new, non-tested and not easily reproducible technologies (because of patents, better location, and the like). In general, the regulating conditions of each industry may not necessarily coincide with the average conditions but are rather determined by the type of capital associated with "the lowest cost methods operating under generally reproducible conditions" (Shaikh, 2008, p. 167).

The rate of profit earned on regulating capital is, therefore, the measure of new investment's return and determines the rhythm of capital accumulation. If two regulating capitals have different rates of profit, the investment will flow differentially

even in the industry with the lowest rate of profit, because of uncertainty and differences in expectations among investors. It is important to point out that the regulating conditions of production do not necessarily specify a single rate of profit, but rather a narrow spectrum of rates of profit. This is true even in the case of a single regulating condition of production, because there are still differences in management, demand, *etc*. which may give rise to profit rate dispersions. Consequently, at any given moment in time, the rate of profit between regulating capitals across industries are not equal and only in the long run is there a tendential equalization of the respective rates of profit to an average.

The problem with the concept of regulating capital is its identification and quantification in actual economies. In principle, this appears theoretically, at least, possible by observing the evolution of an industry over time and collecting data for a group of firms with certain persistent characteristics. Practically, however, such observations are extremely difficult to carry out for all industries and for a quite long period of time. These difficulties lead to indirect ways of approximating the concept of regulating capital and one of these is through the measurement of profit flows resulting from recent investment activity. Naturally, investment activity takes place by and large for the regulating capitals and so profitability of an industry should be estimated not on the capital stock which is really accumulation of all past investment flows, but rather on profits that accrue to firms by their new investment.

This notion of profitability can be captured starting from the definition of the profit rate $r_t = S_t / K_{t-1}$ or $S_t = r_t K_{t-1}$, where t stands for time and the other notation is as above. Hence, the capital stock is lagged by one time period simply because profits come after and not simultaneously with investment. We differentiate with respect to K_{t-1} and so we get:

$$\frac{\mathrm{d}S_t}{\mathrm{d}K_{t-1}} = r_t + K_{t-1}\frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}} = r_t\left(1 + \frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}}\frac{K_{t-1}}{r_t}\right).$$

Where the term $\mathrm{d}S_t / \mathrm{d}K_{t-1}$ indicates the change in profits caused by a change in capital stock of the past period, which is equivalent to saying the change in profits caused by investment flows of the past period, I_{t-1}. The latter is derived from the usual definition of the capital stock, $K_t = (1-\delta)K_{t-1} + I_t$, where δ is the depreciation rate and I_t is the gross investment. It follows that $\Delta K_t = I_t - \delta K_{t-1} = I_{Nt}$ = net investment. Thus, $\mathrm{d}S_t / \mathrm{d}K_{t-1} \approx$

$\Delta S_t / I_{Nt-1} = \rho_t$, which is known as the Incremental Rate of Returns (IROR).[10] The fraction in the parenthesis above stands for the elasticity of the profit rate with respect to capital stock for which the following hold,

$$\text{if } \left(\frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}} \frac{K_{t-1}}{r_t} \right) \gtreqless 0 \text{ then } \rho_t \gtreqless r_t$$

Clearly, the volatility of ρ is determined by the elasticity of the profit rate with respect to capital stock (the term in the parenthesis above), that is, the variability of this elasticity is what differentiates the IROR from the usual average rate of profit.[11] In fact, the concept of IROR is used in the literature of corporate finance as a reliable index for the assessment of profitability of firms and therefore forms one of the "fundamentals" that investors consider in their investment decisions. The argument is that the rate of profit which tends to be equalized between industries is not necessarily the mean rate of profit of the total industry, but rather the rate of profit corresponding to the regulating conditions of production within an industry.

The Figure below depicts the expected trajectories of the usual average rate of profit (r) of an industry and the IROR of the same industry. We observe that the IROR, that is, the volatility of the short-run rate of profit is expected to reflect the uncertainty and all the noise and short-run behaviour in the economy. Thus the IROR is depicted as orbiting around the economy-wide average rate of profit of the industry which is expected to display much less variability.

[10] The concept is known in the literature of corporate finance and was introduced as a proxy for the profit rate of regulating capitals by Shaikh (1995 and 2008).

[11] It is important to note that the IROR is closely related to the internal rate of return which is used in the economics of industrial organization and of corporate finance for investment decisions (See also Tsoulfidis and Tsaliki, 2011).

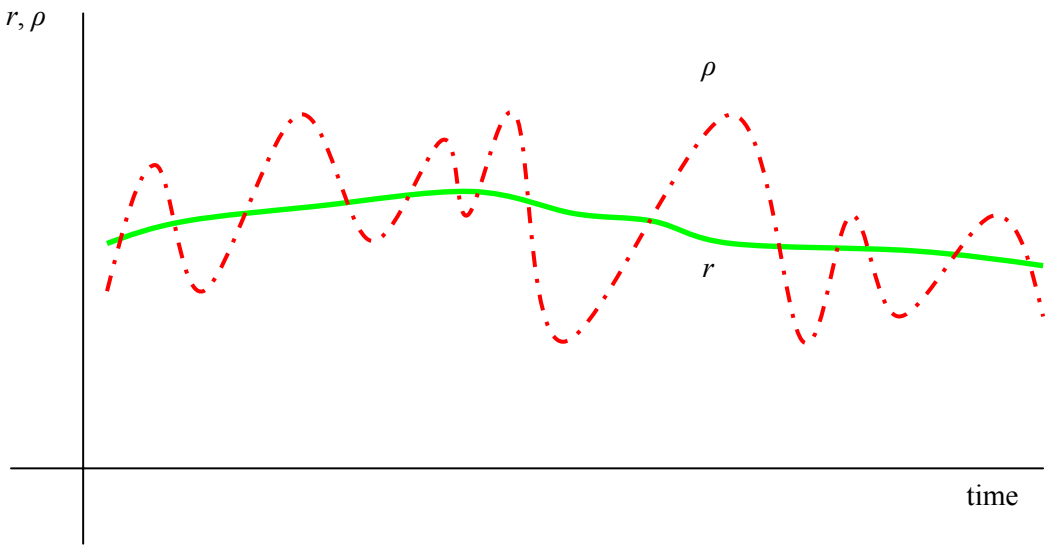

Figure 1. Average rate of profit vs. IROR

Figuratively speaking, the two rates of profit share approximately the same mean, although the variance of the IROR is much higher than that of the average rate of profit. The rationale is that the average rate of profit is the profits of all firms comprising the industry divided by the total capital of the industry; as a result, in the so estimated average are included firms with excessively high profit rates and firms with the lowest profit rates. As a consequence, such extreme rates of profits will most likely tend to cancel each other out giving rise to an average rate of profit with relatively low variability. By contrast, the group of firms forming the regulating conditions pretty much share the same type of production methods and are those firms, where the inflow and outflow of investment takes place and thus their average profitability is expected to display considerably more variability than that of the industry-wide average.

5. Concluding Remarks

If perfect competition is an idealized situation imposed by the requirements of the neoclassical theory, then we can say that the so called “monopolistic competition” revolution of the 1930s essentially led to the establishment of the unrealistic model of perfect competition not only for theoretical purposes but also to inform policy decisions. As a result, the classical conception of competition, as a process of rivalry between firms over market shares was set to the fringes of economic analysis. It is

only in recent years that we are witnessing the resurfacing of the notion of competition as a process in the works of Marxists, Schumpeterian and Austrian economists. It is important to stress that the classical conception of competition because of its realistic approach appears also in the business literature. For example, the work of Porter (1990) as well as the resource advantage approach (Hunt, 2000) have much in common with the dynamic conception of competition as a process of rivalry between firms. Under these circumstance, firms in their incessant struggle for survival introduce new technologies investing in fixed capital and in doing so increase their productivity and reduce their unit cost and by undercutting their prices expand their market share thereby leading to the gradual displacement and subsequent absorption, or simply elimination, of rival firms. It is obvious that this kind of competition is not the same with "competition" as a static situation, where firms have all the time they need to decide on the amount of output to be produced based on a given price. The same argument holds true for other forms of competition, such as the monopolistic or oligopolistic competition, because these models are essentially attempts to inject doses of realism in the static and apparently unrealistic model of perfect competition which always remains in the background of the neoclassical analysis of competition.

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