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Contending Conceptions of Competition and the Role of Regulating Capital

Summary: 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 one another 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 one another.

Key words: Classical competition, Marxian competition, Regulating capital, Incremental rate of return, Flatness profit ratio.

JEL: B12, B13, B14, L11.

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This article contrasts the classical and the neoclassical theories of competition, starting with the classical theory as this was developed in the writings of Smith, Ricardo and J. S. Mill and further 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 and uncertainty, 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. Furthermore, 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 one another in their incessant struggle for survival.

The remainder of the article is structured as follows. Section 1 reviews the literature on competition and focuses on the classical approach to competition as articulated by Smith, Ricardo and J. S. Mill and contrasts this view with the neoclassical one. Section 2 continues with Marx's analysis of competition and shows that certain

phenomena that in the neoclassical conception would indicate lack of competition and 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. Section 3 introduces the concept of regulating capital which is implicit in the classical and neoclassical analyses and becomes explicit in Marx's mature work in *Capital III*, where we may find a fully developed idea that integrates the interindustry and intraindustry aspects of competitive behaviour. Finally, Section 4 provides a summary and some concluding remarks.

1. Review of Literature

Classical economists viewed competition as the coordinating mechanism of conflicting self-interests of independently acting individuals that leads the economy to the establishment of equilibrium in a dynamic sense of the term; that is, an everlasting process of elimination of any excess profits or losses and the tendential attainment of natural prices as the centres of gravitation of market prices. This is the reason why Smith notes that although each individual is pursuing his own self-interest, nevertheless "is led by an *invisible hand* to promote an end which was no part of his intention" (Adam Smith 1776, p. 456). J. S. Mill is more explicit about the role of competition as the organizing principle, which enables the study of economic phenomena (e.g. prices, wages, profits and rent) in a rigorous and therefore scientific way (John Stuart Mill 1848, p. 147).

Although it is not clear exactly how J. S. Mill defines competition, nevertheless he argued that only through competition can both natural prices and the associated with them incomes (wages, profits and rents) be determined in a plausible and analytically rigorous way and what is more important "independently of people's will". Thus, J. S. Mill explicitly recognizes that in the economy there are objective mechanisms (or "laws") in operation that can be subjected to 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 (see also Paul J. McNulty 1968; James A. Clifton 1977; Anwar Shaikh 1980; John Eatwell 1981; Howard Botwinick 1993; Mark Blaug 1997; *inter alia*). For instance, Smith describes this rivalrous price-cutting process through which capitals (firms) are in constant pressure to innovate "in order to undersell one another" and such an undertaking can only be possible through the further divisions of labour, and the new technologies whose introduction has been necessitated by competition (Smith 1776, 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 Smith calls "perfect liberty" and described it as the situation which arises when someone, without violating the laws of society, is free to pursue her own self-interests and in so doing to confront with other similarly motivated individuals pursuing the same goal (Smith 1776, p. 687). Hence, Smith reite-

rates, this time implicitly, the importance of the "invisible hand" characterization of the working of a capitalist economy, when he points out that competition in effect directs the actions of each individual pursuing her own self-interest to promote society's welfare, even though this is not part of her intentions (Smith 1776, 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 and tumultuous process, nevertheless there are often statements that could be interpreted in 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 1776, p. 272).

Hence, one could discern some of the seeds of a quantitative notion of competition. George J. Stigler (1957, 1987), in particular, read in the above lines the description of the basic requirement of perfect competition as a situation directly related to the number of participants. In a similar to Smith's example, but in line with Stigler's interpretation, Krugman and Wells note: "it's important to realize that an oligopoly isn't necessarily made up of large firms. What matters isn't size *per se*; the question is how many competitors there are. When a small town has only two grocery stores, grocery service there is just as much an oligopoly as air shuttle service between New York and Washington" (Paul Krugman and Robin Wells 2009, p. 387).

A closer examination of Smith's often cited quotation reveals that even here competition is fought through the lowering of prices regardless of the structure of the industry, that is, the number of combatants. For example, McNulty in his seminal paper comments with regard to the above passage from Smith: "[a]s far as the concept of competition is related to market structure, we should have to say that Smith, by suggesting that the individual seller could sell more by lowering price and less by raising it, presented a theory of *imperfect* competition. But, in fact, Smith's use of the term seems to have been largely independent of market structure" (McNulty 1967, p. 397). However, major neoclassical authors interpret statements such as the above to mean that in Smith there was an early development of the notion 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 at the end of the nineteenth century (Lefteris

Tsoulfidis 2009, 2010, Chapter 9). 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. This amounts to the view that the notion of perfect competition is utterly foreign to Smith, and that perfect competition is a neoclassical perspective-imposed concept (see also Eatwell 1981, 1987). Thus, the above-cited quotation (from Smith) refers more to a mercantile economy dominated by trade guilds monopolizing both production (producers) and retail trade (shopkeepers), rather than to capitalist enterprises proper operating in towns or cities in accordance to the mobility of capital and labour (Botwinick 1993, Chapter 5; Jamee K. Moudud 2010, Chapter 2; Ascension Mejorado and Manuel Roman 2014, Chapter 3). 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" (Karl Marx 1867, p. 626), which in effect refers to competition in the context of aprecapitalist society. 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 interindustry and intraindustry competition, neither did they integrate these two facets of competition by using a concept such as that of regulating capital that we discuss below. As a consequence, classical economists subsumed the difference of these two distinctive types of competitive behaviour and phenomena into various time spans.

In particular the "law of one price" (LOP) is accepted by both classical and neoclassical economists. For example, Smith's claim that "the prices of bread and butchers' meat are generally the same, or very roughly the same throughout the greater part of the United Kingdom" (Smith 1776, p. 177), Jevon's "law of indifference" (cf. Joseph A. Schumpeter 1954, p. 973) and Walras's idea "that each service and each product have only one price in the market" (Léon Walras 1874, p. 255) are expressions of the same concept. In similar fashion, Alfred 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 discerns the LOP 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 and the LOP is supposed to operate in a rather short time span. Furthermore, since we are referring to the same commodity, it follows that we are necessarily referring to intraindustry competition. By contrast, the attainment of natural prices requires longer time spans, as capital flows in and out of industries tendentially equalizing profit rates 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, the LOP, and unequal profit rates between firms within industries and different prices between industries which nevertheless, in the long-run, tend to be equalized with their natural prices as a consequence of the inflow and outflow of capital ("law of equal profitability").

This idea of inflows and outflows of capital and not necessarily of firms becomes particularly pronounced in Ricardo, when he explicates the adjustment mechanism of establishing equilibrium (natural) prices between industries by arguing that it is not the inflow or outflow of firms which are what one expects to see in the

face of differential profitability, but rather the inflow or outflow of investment. If, for instance, in an industry there is excess profitability one expects the expansion of investment expenditures in this particular industry from internal funds, if they are sufficient, or the inflow of funds from other less profitable industries mainly through the credit system. The converse process is expected in the case of falling profitability in an industry, that is, the contraction of investment activity and the subsequent contraction of supply will raise prices to restore profitability towards the economy-wide average. The credit system facilitates this long-run equilibrating process in both directions (David Ricardo 1821, p. 90).

Classical economists, notwithstanding the realism of their approach to competition and their thorough understanding of its importance in the advancement of scientific status of economic theory, nevertheless, left many issues unsettled and thus they remained confused about various important aspects of competition and the phenomena associated with it. These aspects of competition, we argue in the next section, cannot be effectively addressed within the usual textbook neoclassical theory, where competition is viewed as arising not from direct observation of the way in which firms actually compete with one another, but rather as a way to satisfy the requirements of a theory oriented in the attainment of equilibrium towards which the economy converges in the absence of external shocks. The dynamic approach of the classical competition was further advanced by Marx and also evolutionary economists and we grapple with these advancements below.

Despite the realism of the classical, Marxian and, in general, dynamic conceptions of competition the neoclassical theorization of competition is the one that prevailed, already from the first decades of the twentieth century and is now taught in university amphitheatres and classrooms. In the neoclassical theory, however, the model of perfect competition is always larking in the background and in effect penetrates even in the more recent, general and seemingly more realistic models of imperfect competition. Krugman and Wells in their popular microeconomic text, state this fact as follows: "much of what we learn from the study of perfectly competitive markets-about costs, entry and exit, and efficiency-remains valid despite the fact that many industries are not perfectly competitive" (Krugman and Wells 2009, p. 388). In the recent decades, we are witnessing a more intensive use of game theory as a more pragmatic approach to actual competition, but on reflection, we realize that the route through the game theory is an admission that the usual textbook analysis of competition is far from being satisfactory, since there is neither a generally agreed-upon game nor a monopolistically competitive model to characterize the behaviour of real life competition.

It is important to point out though that the dominance of the neoclassical theory in microeconomics is attributed, at least in part, to some 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 (Michal Kalecki, Paul Sweezy, John Bellamy 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 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 this does not imply by any means that the power of firms over objective market forces has also increased, because, at the same time, the size of the market has also increased. Thus, only a measure of the size of firms relative to the size of the relevant markets would be meaningful, but such a relative measure is exceedingly difficult to construct for the lack of adequate data, especially for the nineteenth century. Furthermore, 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 empirical evidence does not lend support to the view of "market power", especially when the time span of the analysis is sufficiently long (see Malcolm C. Sawyer 1981; Willi Semmler 1984).

Schumpeter's keen analysis was also dismissive of the idea of the supposed existence of a perfectly competitive stage of capitalism, which, from a point onwards was "metamorphosed" to its "monopolistic stage" (Schumpeter 1942, p. 81). Furthermore, he characterized such a competitive stage of capitalism as "wishful thinking" (Schumpeter 1942, p. 106). 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 (Tsoulfidis 2009, 2010, Chapter 10). Thus, one cannot pinpoint with certainty what exactly Schumpeter (1942) 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, and has no title to being set up as a model of ideal efficiency" (*ibid*., p. 106), see also Panayotis G. Michaelides and John G. Milios (2005).

Schumpeter and also the Austrian economists 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 ever-present change (see Israel M. Kirzner 1987; McNulty 1987). 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 not managed, so far at least, 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 contributes to the understanding of many of the contemporaneous competitive phenomena.

2. Marx on Competition

Marx's analysis of competition is based and, at the same time, extends the classical conception of competition expounded mainly by Smith, Ricardo and J. S. Mill. Marx like his predecessors relates in a systematic way his notion of competition with the cost of production - equilibrium price as well as economic growth[1]. 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, and therefore the analysis of competition among capitals follows the laws of accumulation of capital (Shaikh 1980; Semmler 1984; Moudud 2010). For example, Ricardo begins his analysis of the value of commodities by assuming an equalization of profit rates, whereas for Marx such a determination of values of commodities requires a number of intermediate steps which are detailed in the first two volumes of *Capital*, and eight chapters from *Capital III*. 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 similarly-motivated units of capital. This is the reason why Marx argues that the analysis of the laws of accumulation, what he calls the "inner nature of capital" (Marx 1867, p. 316), precedes 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" (Marx 1867, p. 592).

For Marx, competition is envisioned as a turbulent and inherently violent process that resembles, in many respects, actual "war". 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 quite earlier in the writings of Friedrich Engels (1845), who generalized the rivalrous competition to many aspects of economic life. For instance he notes:

> "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 1845, emphasis added).

Hence, competition is described as a rivalrous process involving entities in their struggle for survival, which in the conditions of capitalism is manifested by the insatiable desire of capital to obtain the largest possible profit as a condition *sine qua non* for its own survival. Their repressible desire for profit lead seach capital in opposition with anything stand in gas an obstacle to fulfilling its primary objective. This generalized rivalry leads to the following competitions:

[1] McNulty (1968, p. 650 and p. 652) downplays the contribution of Marx in the theorization of competition in its relation to both the determination of equilibrium prices and economic growth.

- each individual capital fights against others in the battle for the expansion of its market share at the expense of rival capitals which may even end up being completely displaced from the market;
- capital against labour in order to reduce wages, increase productivity in the effort to reduce the unit cost, undercut the selling price and undersell competitors;
- capital against the state, to eliminate any legal obstacles which may limit capital's actions;
- state against other states to safeguard or even to conquer markets or sources of raw materials;
- workers against other workers for employment positions.

Of course here we may distinguish some other more specific micro-antagonisms such as those between genders and races, young *versus* elderly, etc. In other words, in capitalism we have conditions of generalized competition; bluntly put, "war of everyone against everyone" according to the famous Hobbesian phrase which is similar to that of Heraclitus' "the father of all is *war* [= competition]". But, if competition in Marx were confined to these admittedly highly interesting aspects, then essentially we would be limited to the political, sociological or philosophical aspects of Marx's writings and not in *Capital*, that is, his mature economics writings.

In this second and mature stage of analysis, Marx argued, that competition gives rise to broader and more complex and powerful implications superseding the simple generalized rivalry. In particular, competition makes discernible the "laws of motion" that govern capitalist society. Marx systematically develops such a theory of effective competition, which is mainly found in the third volume of *Capital*; where competition is described as warfare between units of capital, which are literally battling "over prices and markets". This dynamic view of competition continues in the works of Schumpeter (1942, 1954) and other Austrian economists, but the *differentia specifica* is that Marx makes a substantive distinction of competition between and within industries. Such a distinction is not made, at least with the same clarity and the same content, in the classical economists or Schumpeter. The neoclassical economists, on the other hand, while they make the distinction between interindustry and intraindustry competition, nevertheless they do so on formal and not on substantive grounds. The salient feature of competition within industries is the prevalence of a single market price out of individual values of commodities. And in competition between industries the tendential equalization of profit rates and the establishment of prices of production (Marx 1894, 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 analyze these two aspects of competition and their synthesis through the concept of regulating capital.

2.1 Competition within Industries

Starting with the aspect of competition between firms within an industry (Marx 1894, pp. 138-139, 178-186, 197-198 and 641-145), firms are viewed as large units of capi-

tal engaged in a fierce price-war with one another in their effort to take hold of an increasing share of the market. Capitals in this war-like competition are successful only by slashing unit costs through innovations usually associated with the introduction of fixed capital. We say fixed capital because through this is achieved the more effective division of labour, the increase in productivity, the reduction in unit cost of production; thereby making possible the undercutting of price and the possible elimination of competition and competitors (Marx 1867, 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. Thus, firms that manage to innovate are in a position to undercut their selling price and increase their market share. 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 decrease their profit rates. However, by decreasing the selling price of their commodity and expanding their market share they raise their profit margin on sales and gradually their rate of profit becomes the top in the industry. Eventually, all producers sell the same commodity for approximately the same price, that is, the LOP prevails (Marx 1894, p. 865) and that is the first consequence of intraindustry competition.

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 unit costs will end up earning profit rates higher than those firms with higher unit 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 LOP, nevertheless the implications of this law are entirely different in the two approaches. In neoclassical economics, the LOP is the consequence of firms' homogeneity, whereas in Marx and more generally in the classical approach the same law is being used to underscore firm heterogeneity. In short, in Marx, firm heterogeneity is the corollary of the tendential establishment of the LOP which gives rise to a stratification of both profit margins and profit rates and in the long-run may even lead to changes in the ranking of the firms comprising the industry.

2.2 Competition between Industries

The first consequence of the analysis of competition between industries is the tendential equalization of the interindustry rates of profit. Firms in each industry are assumed to sell their commodities at market prices that tend to incorporate the economy-wide average rate of profit (AROP) 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 AROP. In econometric

terms, the time series data of the deviation of an industry's profit rate from the economy's AROP should be stationary. In other words, the dispersion of the rates of profit around the average takes place quite regularly and persists over time, which is equivalent to saying that the rates of profit do not converge to each other. In other words, the 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. For a formal presentation of the long-run equalization of profit rates as a gravitational process see Gérard Duménil and Dominique Lévy (1987) and Peter Flaschel and Semmler (1987).

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. In fact, starting from the definition of the profit rate for an industry j, we can write:

$$r_j = \left(\frac{S}{K}\right)_j = \frac{(S/Q)_j}{(K/Q)_j} = \frac{m_j}{(K/Q)_j} \quad \text{or} \quad m_j = r_j(K/Q)_j \tag{1}$$

where r is the AROP, S is the total profits, K is the fixed capital stock, Q is the gross output or total sales, $m = S/Q$ is the profit margin on sales. The above formulation shows the direct relationship between the profit margin on sales of an industry j, m_j, and its capital-output ratio $(K/Q)_j$. If there is an equalization of the interindustry profit rates towards the economy-wide AROP, then it follows that the profit margins on sales will tend to be proportional to the relative capital-output ratios. 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), Eduardo M. Ochoa and Mark Glick (1992) and Persefoni Tsaliki and Tsoulfidis (1998). Thus the high profit margin on sales (or costs) of capital-intensive industries do not necessarily reflect monopoly or power of these industries over market forces, but they are the result of capitalist competition and the interindustry equalization of profit rates to the economy's average.

The capital-output ratio indicates the degree of mechanization of an industryand, at the same time, captures the size of the investment requirements per unit of output (sales) of potential entrants. In the neoclassical conception of competition, a high capital-output ratio is often taken a sa *prima-facie* evidence of a barrier to entry in an industry and, at the same time, as a deviation from the small (relative to the overall market) size of the firm required axiomatically for the fulfillment of the conditions of perfect competition. Therefore, in the neoclassical theory (as well as in the heterodox theory of monopoly capital), the correlation between the high profit margins and high capital-output ratio is viewed as evidence of the presence of oligopolistic conditions and market power. In contrast, in the classical theory this relationship is one of the anticipated results of the competitive behaviour.

Furthermore, higher investment requirements just specify the form of entry (or exit) in an industry and do not necessarily indicate barriers to the inflow or outflow of capital. In other words, the level of capital requirements determines the form of capital mobility, whether it will be less flexible in case of high capital requirements

or more flexible when the capital requirements are relatively lighter. The justification of this view is that the credit system is almost always ready to provide the required funding, provided that investment promises profits regardless of the size of capital requirements.

It is important to emphasize at this point that the attainment of the economy-wide AROP for the capital-intensive (or high capital requirements) industries might be lengthier than that of the labour-intensive ones and so the higher (or lower) than the economy-wide average rates of profits persist longer in the capital-intensive rather than in the labour-intensive industries. The reason is that the capital-intensive industries are characterized by high entry (also exit) adjustment costs rendering the maintenance of relatively high reserve capacity as the most effective "weapon" for responding to variations in demand. As we explained earlier, the slow mobility of capital in the capital-intensive industries gives rise to price rigidities in the face of changing demand conditions. In other words, when demand changes, industries with a high capital requirements tend to absorb these demand variations more through adjustments in their rate of capital utilization and employment, and less through price variations. As a consequence, the capital-intensive industries are characterized by a smaller variation in profit margin for each percentage change in sales (demand). Also, the percentage change in the profit rate is lower in the capital-intensive industries because the changes in demand affect more the volume of output rather than prices.

These consequences of interindustry competition can be shown starting from the profit margin on sales $m = r(K/Q)$ whose total differential (in discrete time) gives:

$$\Delta m = r\Delta(K/Q) + \Delta r(K/Q). \tag{2}$$

We divide through by m and we convert the above relationship in terms of percentages:

$$\frac{\Delta m}{m} = r\frac{\Delta(K/Q)}{r(K/Q)} + \frac{\Delta r}{r} = \left[\frac{(\Delta K \cdot Q - \Delta Q \cdot K)/Q^2}{K/Q}\right] + \frac{\Delta r}{r} \quad \text{or} \quad \frac{\Delta r}{r} = \frac{\Delta m}{m} + \frac{\Delta Q}{Q} - \frac{\Delta K}{K}. \tag{3}$$

By expressing the above relation in terms of elasticities with respect to sales, we get:

$$\frac{\Delta r}{\Delta Q}\frac{Q}{r} = \frac{\Delta m}{\Delta Q}\frac{Q}{m} + 1 - \frac{\Delta K}{\Delta Q}\frac{Q}{K}. \tag{4}$$

We stipulate that a percentage change in sales ($\Delta Q / Q$), or growth in demand, leads to infinitesimally small changes in capital stock and for all practical purposes we can set them equal to zero $(\Delta K / K = 0)$. The elasticity of the rate of profit with respect to sales is proportional to the corresponding elasticity of the profit margin on sales which, as we have pointed out in our second consequence of interindustry competition, is inversely related to the industry's capital-intensity. Therefore, an industry with a capital-intensity higher than the economy-wide average will be characterized

by relatively rigid profit margins and low elasticity of profit margins with respect to sales, and the same is true with the elasticity of the rate of profit.

To sum up, the observed relatively large amounts of reserve capacity in the capital-intensive industries as well as their rigid prices have been interpreted by some heterodox economists as indexes of monopoly power. However, on closer examination, these same phenomena are precisely those expected 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. Only in the longer run are these large size firms expected to respond to persistent changes in demand by changing prices, profit margins and profit rates. Thus if demand increases the heavy capital requirements industries will experience high profits, as they increase their capacity utilization rate. At the same time, new investment and entry of firms in the industry will not be easy because of high capital 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, Chapter 3; Botwinick 1993, Chapter 4; Tsoulfidis and Tsaliki 2005, 2013; Moudud 2010, Chapter 2).

3. Regulating Capital and Its Rate of Profit

In the analysis of competition in Marx's *Capital*, we are confronted with the following seemingly 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 AROP of all firms comprising the industry; since an industry consists of a number of firms some of which use the latest technology and ideal location and some other firms operate with outdated technology and less privileged and therefore higher cost location. Classical economists were well aware of these limitations in the flows of capital, and therefore they considered that the relevant rate of profit is not necessarily the industry's average, but rather the rate of profit corresponding to 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 (1821, p. 73 and pp. 86-87), for example, this kind of marginal capital is associated with the worst or in Ricardo's (1821, p. 73) wording "the most unfavourable" conditions of production, whereas on the other side of the spectrum in Mill (1848, p. 131) with the best. Smith's pin factory lies somewhere between these two extreme situations. As Smith notes, this "very trifling manufacturing" is the type of capital that changes take place and shape the rhythm of capital accumulation characterizing the industry as expanding or contracting. 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 idea that all firms adopt this method of production right away, since firms operate fixed capitals of different vintages and managers have different anticipations about the future demand and profitability. Consequently, firms do not quickly switch from one method of production to another. However, new capitals are expected to enter into the method of production or technology, which can be easily emulated and, at the same time, the anticipated rate of profit is high enough.

New contestants by and large aim at the most up-to-date plants or production conditions in the industry and not the outdated or the most efficient ones. The outdated production methods, other things equal, possess profitability lower than the average, whereas the most profitable methods of production may not be easily duplicated or their reproduction may entail a certain degree of risk, thereby discouraging potential new contestants. Hence, during "a cycle of fat and lean years" that is, over a long period of time there is tendential equalization of interindustry profit rates for the regulating capitals. In other words, investment flows are attracted, neither to the outmoded capitals, simply because of their low profitability, nor to the ultra-modern capitals because of their high risk. The regulating conditions will differ in general from the industry's average and they will be determined by the type of capital or technology in use associated with "the lowest cost methods operating under generally reproducible conditions" (Shaikh 2008, p. 167).

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 obtain for all industries over a long period of time. These difficulties lead to indirect methods of quantifying the concept of regulating capital and one of these is through the measurement of profit flows resulting from recent investment activity. We start with the idea that the bulk of investment activity is directed towards the regulating capitals and so profitability of an industry should be estimated not on the capital stock which is really the accumulation of all past net investment flows, but rather on profits that accrue to firms by their new investment. This notion of profitability can be captured by the definition of the profit rate:

$$r_t = S_t / K_{t-1} \text{ or } S_t = r_t \cdot K_{t-1} \tag{5}$$

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 the above equation with respect to K_{t-1} and we get:

$$\frac{\mathrm{d}S_t}{\mathrm{d}K_{t-1}} = r_t + K_{t-1}\frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}} = r_t\left(1 + \frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}}\frac{K_{t-1}}{r_t}\right). \tag{6}$$

Hence, the term $\mathrm{d}S_t/\mathrm{d}K_{t-1}$ indicates the change in profits caused by a change in capital stock or by investment flows of the past period, I_{Nt-1}. Invoking the 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

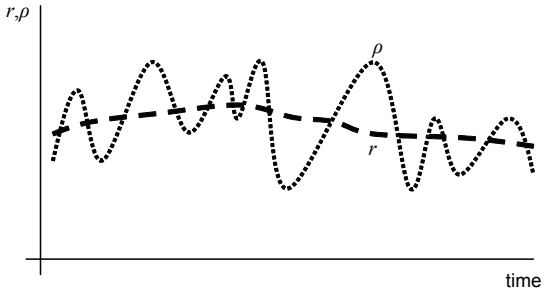
gross investment. It follows that $\mathrm{d}K_t = I_{Nt} = net\,investment$. Thus, $\mathrm{d}S_t / dK_{t-1} \approx \Delta S_t / I_{Nt-1} = \rho_t$, which is called the incremental rate of return (IROR).

The concept of IROR was introduced by Shaikh (1995, 2008) as a proxy for the profit rate of regulating capitals. The term $(\mathrm{d}r_t / \mathrm{d}K_{t-1})(K_{t-1} / r_t)$ stands for the elasticity of the profit rate with respect to capital stock for which the following hold:

$$\frac{\mathrm{d}S_t}{\mathrm{d}K_{t-1}} \frac{K_{t-1}}{S_t} = \frac{\rho}{r} = 1 + \left(\frac{\mathrm{d}r_t}{\mathrm{d}K_{t-1}} \frac{K_{t-1}}{r_t} \right). \tag{7}$$

Clearly, the volatility of ρ is determined by the elasticity of the profit rate with respect to capital stock (the term in the above parenthesis), that is, the variability of this elasticity of the AROP is what distinguishes the IROR from the usual AROP.

Figure 1 below depicts the expected trajectories of the usual AROP of an industry and the IROR of the same industry. We observe that the IROR 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 industry-wide AROP which is expected to display much less variability.



Source: Author's construction.

Figure 1 Industry AROP vs. IROR

Figuratively speaking, the two measures of profitability are expected to share approximately the same mean, although the variance of the IROR is much higher than that of the AROP. The justification is that the AROP 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 AROP with relatively low variability. By contrast, the group of firms forming the regulating conditions of production pretty much share the same type of production methods and are those firms, where the bulk of 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 AROP.

It is interesting to note that the ratio of the IROR to the industry's AROP, which we may call the profit-flatness ratio (PFR), reflects the extent to which the constituent firms in an industry perform the same way with the leading firms or the most efficient firms. In real life competition the PFR shows the extent to which the average-practice technologies keep up with the best-practice technologies within the same industry. If for example $\rho / r > 1$ it means that the leading or rather the regulating firms are doing better than the average, which might be the usual case in manufacturing industries. We may also have the case where $\rho / r < 1$, which is expected in agriculture or mining industries, where the regulating firms are the least efficient ones, since expansion or contraction of economic activity takes place in the least productive parcels of land or mines. The PFR is a concept that has not been tested so far and it would be interesting to see its use in actual economies.

4. Concluding Remarks

If perfect competition is an idealized end-state imposed by the requirements of the neoclassical theory, then we can say that the so called "monopolistic competition" revolution of the 1930s led to the establishment of the unrealistic model of perfect competition not only for theoretical purposes but also to guide policy decisions (Blaug 1997). 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 decades 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 pragmatic characteristics appears also in the business literature. For example, the work of Michael E. Porter (1990) as well as the resource advantage approach of Shelby D. Hunt (2000) have much in common with the dynamic conception of competition as a process of rivalry between firms. Under these circumstances, firms in their incessant struggle for survival introduce new technologies by investing in fixed capital and in doing so increase their productivity and reduce their unit cost. Consequently, these firms by undercutting their prices expand their market share and gradually displace and subsequently absorb or simply eliminate the 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 very same argument holds true for the various other models of neoclassical competition, because in these models the idea is to insert pragmatism into the static and apparently unrealistic model of perfect competition which always remains in the background of the neoclassical analysis of competition.

By contrast, the classical conception of competition is characterized not only by realism, but also by a capacity for addressing current economic phenomena of the operation of markets. Hitherto research in the classical conception of competition has displayed substantial progress on both theoretical and empirical grounds. Moreover, within the classical conception to competition the notion of regulating capital and the associated with it IROR constitute a fertile ground for further future research efforts and the preliminary results have been particularly encouraging.

References

Blaug, Mark. 1997. "Competition as an End-State and Competition as a Process." In *Trade, Technology, and Economics: Essays in Honour of Richard G. Lipsey*, ed. Buford Curtis Eaton and Richard G. Harris, 241-262. Cheltenham: Edward Elgar.

Botwinick, Howard. 1993. *Persistent Inequalities: Wage Disparity under Capitalist Competition*. Princeton: Princeton University Press.

Clifton, James A. 1977. "Competition and the Evolution of the Capitalist Mode of Production." *Cambridge Journal of Economics*, 1(2): 137-151.

Duménil, Gérard, and Dominique Lévy. 1987. "The Dynamics of Competition: A Restoration of the Classical Analysis." *Cambridge Journal of Economics*, 11(2): 133-164.

Eatwell, John. 1981. "Competition." In *Classical and Marxian Political Economy: Essays in Memory of Ronald L. Meek*, ed. Ian Bradley and Michael Howard, 203-228. London: Macmillan Publishers Ltd.

Eatwell, John. 1987. "Competition: Classical Conceptions." In *The New Palgrave: A Dictionary of Economics, 1st ed.*, ed. John Eatwell, Murray Milgate, and Peter Newman, 537-540. London: Macmillan Publishers Ltd.

Engels, Friedrich. 1845. *Condition of the Working Class in England*. London: Penguin Books.

Flaschel, Peter, and Willi Semmler. 1987. "Classical and Neoclassical Competitive Adjustment Processes." *The Manchester School of Economic & Social Studies*, 55(1): 13-37.

Hunt, Shelby D. 2000. *A General Theory of Competition: Resources, Competences, Productivity, Economic Growth*. London: Sage Publications.

Kirzner, Israel M. 1987. "Austrian School of Economics." In *The New Palgrave: A Dictionary of Economics, 1st ed.*, ed. John Eatwell, Murray Milgate, and Peter Newman, 145-151. London: Macmillan Publishers Ltd.

Krugman, Paul, and Robin Wells. 2009. *Microeconomics*. New York: Worth Publishers.

Marshall, Alfred. 1890. *Principles of Economics*. London: Macmillan Publishers Ltd., 1952.

Marx, Karl. 1847. *Wage Labour and Capital*. Moscow: Progress Publishers.

Marx, Karl. 1867. *Capital.* Vol. 1. New York: International Publisher, 1977.

Marx, Karl. 1894. *Capital.* Vol. 3. New York: International Publisher, 1977.

McNulty, Paul J. 1967. "A Note on the History of Perfect Competition." *Journal of Political Economy*, 75(4): 395-399.

McNulty, Paul J. 1968. "Economic Theory and the Meaning of Competition." *Quarterly Journal of Economics*, 82(4): 639-656.

McNulty, Paul J. 1987. "Competition: Austrian Conceptions." In *The New Palgrave: A Dictionary of Economics, 1st ed.*, ed. John Eatwell, Murray Milgate, and Peter Newman, 536-537. London: Macmillan Publishers Ltd.

Mejorado, Ascension, and Manuel Roman. 2014. *Profitability and the Great Recession: The Role of Accumulation Trends in the Financial Crisis*. New York: Routledge.

Michaelides, Panayotis G., and John G. Milios. 2005. "Did Hilferding Influence Schumpeter?" *History of Economics Review*, 41: 98-125.

Mill, John Stuart. 1848. *Principles of Political Economy*. Fairfield: Augustus M. Kelley, 1976.

Moudud, Jamee K. 2010. *Strategic Competition, Dynamics, and the Role of the State: A New Perspective*. New York: Edward Elgar.

Ochoa, Eduardo M., and Mark Glick. 1992. "Competing Microeconomic Theories of Industrial Profits: An Empirical Approach." In *The Megacorp and Macrodynamics: Essays in Memory of Alfred Eichner*, ed. William Milberg, 225-248. New York: M. E. Sharpe.

Porter, Michael E. 1990. *The Competitive Advantage of Nations*. 1st ed. New York: Free Press.

Ricardo, David. 1821. *Principles of Political Economy and Taxation*. Cambridge: Cambridge University Press, 1951.

Sawyer, Malcolm C. 1981. *The Economics of Industry and Firms: Theories, Evidence and Policy*. New York: St. Martin's Press.

Schumpeter, Joseph A. 1942. *Capitalism, Socialism and Democracy*. New York: Harper & Row.

Schumpeter, Joseph A. 1954. *History of Economic Analysis*. New York: Oxford University Press.

Semmler, Willi. 1984. *Competition, Monopoly and Differential Profit Rates: On the Relevance of the Classical and Marxian Theories of Production Prices for Modern Industrial and Corporate Pricing*. New York: Columbia University Press.

Shaikh, Anwar. 1980. "Marxian Competition versus Perfect Competition: Further Comments on the So-Called Choice of Technique." *Cambridge Journal of Economics*, 4(1): 75-83.

Shaikh, Anwar. 1995. "The Stock Market and the Corporate Sector: A Profit-Based Approach." The Jerome Levy Economics Institute Paper 146.

Shaikh, Anwar. 2008. "Competition and Industrial Rates of Return." In *Issues in Finance and Industry: Essays in Honour of Ajit Singh*, ed. Philip Arestis and John Eatwell, 167-194. New York: Palgrave Macmillan.

Smith, Adam. 1776. *The Wealth of Nations*. New York: Modern Library, 1976.

Stigler, George J. 1957. "Perfect Competition, Historically Contemplated." *Journal of Political Economy*, 65(1): 1-17.

Stigler, George J. 1987. "Competition." In *The New Palgrave: A Dictionary of Economics, 1st ed.*, ed. John Eatwell, Murray Milgate, and Peter Newman, 531-535. London: Macmillan Publishers Ltd.

Tsaliki, Persefoni, and Lefteris Tsoulfidis. 1998. "Alternative Theories of Competition: Evidence from Greek Manufacturing." *International Review of Applied Economics*, 12(2): 187-204.

Tsoulfidis, Lefteris, and Persefoni Tsaliki. 2005. "Marxian Theory of Competition and the Concept of Regulating Capital: Evidence from Greek Manufacturing." *Review of Radical Political Economy*, 37(1): 5-22.

Tsoulfidis, Lefteris. 2009. "The Rise and Fall of Monopolistic Competition Revolution." *International Review of Economics*, 56(1): 29-45.

Tsoulfidis, Lefteris. 2010. *Competing Schools of Economic Thought*. Heidelberg: Springer.

Tsoulfidis, Lefteris, and Persefoni Tsaliki. 2013. "Classical Competition and Regulating Capital: Theory and Empirical Evidence." In *Alternative Theories of Competition: Challenges to Orthodoxy*, ed. Jamee K. Moudud, Cyrus Bina, and Patrick L. Mason, 267-297. London: Routledge.

Walras, Léon. 1874. *Elements of Pure Economics*. Homewood: Richard D. Irwin, Inc., 1954.

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