127

COMPETITION, EFFECTIVE DEMAND AND LONG-RUN POSITION IN A CAPITALIST ECONOMY

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RESUMEN

En este ensayo se analiza la utilidad de la categoría **posición de largo plazo de la economía capitalista** para el desarrollo de una teoría del producto y del empleo basada en el principio de la demanda efectiva. Se examina críticamente el papel de las expectativas y del proceso de competencia en los contextos teóricos Post-Keynesiano y Neo-Ricardiano, para luego relacionarlas con el propósito de explicar los ciclos, la **posición de largo plazo** y sus movimientos. Esta **posición de largo plazo** aparece como un resultado promedio de los movimientos de corto plazo de la economía y desempeña el papel de **centro de gravedad** al igual que los precios de producción Ricardianos. La relación entre el corto y largo plazo, o entre las fluctuaciones y el **centro de gravedad**, se formaliza en un modelo o sistema de ecuaciones deferenciales lineales y no-homogéneas.

En el ensayo, se sugiere situar la teoría de la Demanda Efectiva como teoría de corto plazo en un contexto de largo plazo. Así, sobre la base de la solución particular del mencionado sistema de ecuaciones, se determina una **posición específica de largo plazo**, para una tecnología y distribución del ingreso dadas, que se traduce en un nivel de inversión que correspondería a un **nivel normal** de utilización de la capacidad productiva. Decidido el nivel de inversión por los capitalistas, el nivel de consumo queda también determinado de forma tal que no existen problemas de demanda efectiva. Sin embargo, se trata sólo de una **posición de largo plazo** en un momento dado del tiempo y que, por lo tanto, desempeña sólo el papel de contexto para el análisis de corto plazo. La **posición de largo plazo** es cambiante por la presencia de las expectativas y la competencia en las decisiones de inversión de los capitalistas. La inversión lidera los movimientos de la demanda al mismo tiempo que genera, mediante un proceso dinámico, capacidad productiva y mejores condiciones tecnológicas para producir. Estos dos aspectos de la inversión son considerados en el análisis del crecimiento y las fluctuaciones cíclicas.

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COMPETITION, EFFECTIVE DEMAND AND LONG-RUN POSITION IN A CAPITALIST ECONOMY

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I. INTRODUCTION[1]

The main purpose of this paper is to examine the usefulness of the long period position category to develop a theory of output and employment based on the keynesian principle of effective demand.

Such a category has played a prominent methodological role in the construction of classical economic theory and it is experiencing a controversial renaissance in the context of the analysis of output and prices of production based on the surplus approach. (Eatwell, 1982; Garegnani, 1976, 1978, 1979; Milgate, 1982; Nell, 1982, 1983; Robinson, 1974, 1979; Semmler, 1984).

The Post-Keynesian school constitutes an important counterpart in this polemic by emphasizing that the theory of effective demand is grounded in an institutional framework and the role of expectations (Davidson, 1977; Davidson and Kregel, Dutt 1991-92, 1980; Kregel, 1984; Minsky, 1975).

Both schools agree in rejecting the orthodox theory of the simultaneous determination of prices and output, but they have different reasons for so doing. Whereas the Neo-Ricardians focus on the inability of orthodox theory to determine long-period positions in the context of an inconsistent capital theory, the Post-Keynesians concentrate on uncertainty and the role of money in explaining the situation of involuntary unemployment.

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Certainly, the notion of equilibrium, with its related short-run and long-run categories, is the matter in dispute. On the one hand, the Cambridge debate showed the uselessness of behavioral analysis in the context of scarcity for explaining the simultaneous determination of long-run equilibrium prices and quantities. Therefore, distribution among classes can no longer be considered as a matter of optimal allocation of capital and labor but as a matter related to the very nature of the capitalist economy. On the other hand, Keynes' theory of effective demand questioned the neoclassical notion of equilibrium with full employment by introducing a behavioral analysis of investors framed in the monetary nature of the capitalist economy. For him, a situation of unemployment cannot be a special case of its opposite.

Therefore, if there is some long-run position of the economy, this would have nothing to do: first, with the neoclassical notion of "optimum" income distribution; second, with full employment or cleared labor markets; and, third, with the simultaneous determination of equilibrium prices and quantities of produced goods. But, by opposition, it would be related: first, to prices which are not market clearing; second, to separate theories of distribution, prices and activity levels; and, third, to permanent unemployment. What about the behavioral analysis? It seems to be that the main difference between the surplus approach and the Post-Keynesian school is to be found in this point.

For the contenders belonging to the Classical and Marxian schools, the long-run position is not determined by forces of supply and demand; hence, behavioral analysis would play no role in determining the pattern of natural prices and equilibrium quantities. But here a qualification is necessary. The Neo-Classical behavioral analysis is not grounded in the institutional and socio-economic structure of the capitalist economy. Therefore, the psychology linked to scarcity (or to a given endowment) and individual consumer preferences cannot be subsumed under the social psychology of the capitalist ruling class. The behavior of investment decision makers under the uncertain conditions of a monetary economy, emphasized by the Post-Keynesian school, is also inherent in the economy's structure.

Indeed, there are other differences between both schools; and, at first glance, it would seem that they are not reconcilable, but by contrasting them we will find some theoretical issues which can be analyzed in a common framework.

The category of long-run position has its origin in a general concept of a center of gravity towards which the market economy supposedly moves.[2] The supporting reason for this concept would be the existence of a force which has a persistent or systematic nature in the operation of the market. This force is thought to be competition which would dominate prices in the sense that it produces a tendency towards a uniform rate of profit, or reduces differing market rates of profit, to the average rate. However, it is worth noting that with this concept of competition the conventional notion of stability, associated with the mathematical prescription of an asymptotic convergence towards equilibrium values, is taken for granted (Steedman, 1984).

For the surplus approach the center of gravity would be, then, the long-run supply price in the sense that it expresses the movement of capital among sectors. However, this concept presupposes a given technology, income distribution and productive capacity for the economy as a whole. (The income distribution must not only be related to the property relations of the system but also to the structure and conditions of production.) It then becomes clear that short-run variations in demand have no role in changing long-run supply prices. Therefore, the only theory of output related to the long-run horizon must be a theory which considers the long-run changes in demand affecting long-run supply prices through the variations in general capacity levels. As we will see, this introduces a problem to the Neo-Ricardian interpretation of the concept of the center of gravity, because it cannot grasp the variation of capacity levels, that is to say, it cannot incorporate the theory of output into a theory of accumulation.

II. COMPETITION, PERSISTENCE AND BALANCE REPRODUCTION

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[2] In classical economics, natural prices play the role of center of gravity, while in Marxian economics the same role would be played by prices of production.

According to A. Lowe, "the central problem of capitalism has often been defined as a question of how order rather than chaos ensues from the undirected action of innumerable individuals" (Lowe, 1984,p. 115).

Since the capitalist system is a dynamic economy this question presupposes the existence of certain inherent forces, which permit changes to be displayed in a regular manner. The object of economic theory, therefore, must be related to the examination of these systematic forces in a twofold sense. First, the study of the operation of these forces should inquire about the continuation of the capitalist economy in the sense of the expanded reproduction of its basic conditions. Second, for explaining the law of operation of a capitalist system which grows spontaneously, given the independent behavior of its agents, the regulating forces should bring about a tendency toward an equilibrium position. The economy should create then in the midst of disequilibrium its own regulating factor or center of gravity.[3] These two elements are related to the concept of capital movement and competition. The latter notion of competition is generally related to capital movement in the sense that given sectoral differences in the profit rate, it would ensure the gravitation of market prices around prices of production. However, this is not enough, because it only captures one aspect of the dynamic character of competition.

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[3] The concept of equilibrium used here corresponds to the concept of "balanced reproduction". We will see later that the sectorial proportionate growth has to be associated with a general rate of profit and the corresponding prices of production. At these prices, at any given time, a manufacturer would be able to sell only what the market will take. Then, short-run analysis can be carried out in terms of an equilibrium of prices, but not in terms of an equilibrium of individual outputs. Clearly, this is not compatible with the Neoclassical definition of equilibrium which entails a balance between marginal revenue and marginal cost for each individual business. In the context of our analysis, output and activity, in general, depend upon the demand for the corresponding products. The aggregate demand does not accomodate itself to the aggregate supply price. So, in each moment of time, there will be a unique value of the aggregate demand "which becomes effective because, taken in conjuntion with the conditions of supply, it corresponds to the level of employment which maximizes the entrepreneur's expectation of profits" (Keynes, 1964, p.65). Consequently, in each moment of time, prices of production and insufficient effective demand are totally compatible.

According to Marx, competition is a dynamic process which also creates disequilibrium in the sense that capitalists are always trying to improve the conditions of production as a way to displace (outrace) their rivals. With this dynamic notion the statement that capitalist are oriented to the sector with the higher rate of profit acquires an appropriate dimension. But from the static point of view, movements of capital would be from advanced to backward sectors, because the latter would have the highest rate of profit (Nell, 1983). From a dynamic point of view, the movement of capital can be understood as investment in a twofold sense: On the one hand, investment is a process which generates a dynamic movement creating better technological conditions of production and making the corresponding capital more efficient and profitable. On the other hand, investment generates a movement from backward to advanced capital to equilibrate the rate of profit. These two related elements express the nature and the direction of capitalist accumulation.

For the foregoing reasons the process of investment must always be understood as a factor which changes the capacity level in the economy as a whole. This is what J. Robinson calls the “long period aspect of investment”. (Robinson, 1979, p. 179.) Given a specific capacity level, differences in quantities supplied in relation to the normal utilization of capacity would give rise to deviations of market prices from normal prices. However, because the difference in quantities is associated with the nature of changes in aggregate demand, two possible movements can be identified. First, a change in capacity utilization to catch up the short-run variations in demand. Second, the differences in the rate of profit associated with long-run variations in aggregate demand can generate changes in the capacity level through net investment.

It becomes useless to analyze the determinants of investment in the first movement because capitalists can respond to discrepancies in quantities due to short-run variations in demand only by changing capacity utilization. Prices will remain unchanged despite variations in output. Since the growth of a capitalist enterprise is limited fundamentally by its market, when prices and cost are given, it will stick to its "pricing policy" to face short-run variations in demand. Investment, the autonomous variable and the main component of aggregate demand, will determine the actual level of output and employment.

The second movement becomes theoretically more important in that respect because it is associated with the process of capital accumulation. If the change in demand is maintained, it will influence economic growth through changes in investment. Therefore, due to its above-mentioned characteristics, investment will generate long-run dynamic positions in the economy. For these long-run positions to reflect systematic regularities of the economy, capital movements have to be associated not only with an equalized rate of profit over sectors but also with balanced growth. However, investment which reflects the behavior of the capitalist and comes about through competition, will not necessarily correspond to that long-run position.

As Marx points out, "Under capitalist production, the general law acts as the prevailing tendency only in a very complicated and approximate manner, as a never ascertainable average of ceaseless fluctuations" (Marx, 1967, Vol. III. p.161).

Competition involves the rivalrous process between individual capitals. It generates a struggle for a greater share of the market and higher rates of profit in the intra-and inter-industry context. This rivalrous process generates destabilizing movements in the system. Expanded reproduction itself will mean reproduction of these discrepancies, creation of cycles and crisis, which, in turn, due to the compensating movements inherent to the capital flows, will create a balancing tendency as an average dynamic result of competition. Therefore, the center of gravity will only express the forces which give regularity and persistent nature to the capitalist system. The center of gravity cannot be associated with a resting equilibrium position as in the neoclassical notion of long-run equilibrium. Moreover this regularity can only be understood in the sense that the behavior of capitalists is grounded in a particular institutional framework which not only assures the reproduction of class relations but also provides the possibility to produce and accumulate (and in times might even create conditions for overcoming the crisis). In relation to this latter point the credit and monetary system becomes crucial in the analysis of the role of investment.

III. NEO-RICARDIANS AND POST-KEYNESIANS: A SHORTCOMING IN THE NOTION OF COMPETITION

According to the Neo-Ricardians, the long period method of economic analysis implies that its object should be the long term position of the economy because it represents the systematic nature of the system. They support this idea claiming that competition, which is considered to be a systematic and persistent force, has a stabilizing effect on the movement of capital and, hence, ensures that the mentioned long-run position is achieved through the equalization of the rate of profit among different industries.

According to their account of the history of economic thought, especially of the break from classical to neoclassical economics, they argue that the Neoclassical framework has the same method and object but a different explanation of the manner in which prices, the wage rate and the general rate of profit together with output and employment are determined in the long-run conditions. For them, therefore, the theories are different, because they exhibit a different notion of competition.

Neoclassical theory requires prices and the capital stock to be given, in order to explain the short-run equilibrium of firms. This implies that the short-run equilibrium of the industry is based on the assumption that all firms are price-takers. If the price-taking behavior were not considered it would not be possible to aggregate individuals' behavior into market demand and supply schedules. This modified notion of competition (or this particular notion of behavior) is also necessary for the long-run equilibrium. In this sense, according to the Neo-Ricardians, Neoclassical long-run normal prices hybridize the long period method. Given consumers' taste, technology and initial endowments of factors and/or commodities, the Walrasian equilibrium is determined when there is no possibility of improving the allocation of resources and/or commodities by whatever coalition. This means that prices are determined as a limit in the sense that the core of the economy shrinks as the number of traders increases. At this point the price is given and the traders have to be price-takers. (Varian, 1980, pp. 210-15.) This notion of perfect competition is crucial for the supply and demand theory of prices: if for all markets of the economy, individual demands and supplies could not be aggregated, it would not be possible to achieve equilibrium prices.

Two conclusions can be drawn from this exposition of the Neoclassical approach: First, the notion of competition is not any more linked to the mobility of capital and its

effects on the rate of profit. Second, the related behavioral analysis of this notion of competition is deprived of the structural and institutional framework present in the capitalist economy.

The Neo-Ricardians criticize this empty concept of competition introducing and overemphasizing, in a static framework, the concept of competition linked to capital movements. According to Milgate, "The competitive tendency towards uniformity of profit rates is all that is required for the application of long-period normal conditions as the object of analysis. While it is quite possible for natural or long-period normal conditions to refer to stationary or steady-state economies (when the 'tendency' is realized in actuality), it is equally possible for them to refer to non-stationary economies. It is, of course, assumed that the factors affecting the forces which determine long-period normal values change slowly..." (Milgate, 1982, pp. 30)

This is so because they do not take into consideration the fact that competition as a dynamic process expresses the behavior of the capitalist class. However, it must be mentioned that they implicitly consider the class struggle only with respect to the distribution of surplus. But because they ignore the role played by the capitalist decision makers, they state that the method and the object of economic analysis was the same for the Classicals and the NeoClassicals.

The Neo-Ricardian argument leads to three theoretical issues. First, they leave the field of behavioral analysis to the limited stimulus/response treatment of it by the NeoClassicals, thereby implicitly supporting their monopoly in this field. Second, Neo-Ricardians also run into problems with the separation of method and theory, which cannot be reasonably maintained if one considers the behavior of capitalists as investors. Third, they reject this subjective aspect of the decision makers because they assume that it only entails the short-run position of the economy and does not tell anything about the long-run.

Certainly, Nell is correct when he claims that the shift from classical to marginalist schools was from a structural analysis (related to the reproduction of the economy) to a behavioral analysis (related to the determination of market clearing prices). Hence method

and theory was changed (Nell, 1984). However, as we will see later, the behavioral theory derived from the marginalist revolution has nothing to do with Keynes' behavioral analysis, which is embedded in the very social and institutional nature of the capitalist system. This kind of behavioral analysis is a complement of structural analysis. As Foley points out, "the study of the formal structural aspects of commodity production can take us only a limited distance; to go further we must propose behavioral regularities for agents that flow from their specific positions in a historically determined mode of production". (Foley, 1983, p.12.)

The Post-Keynesians, on the other hand, have stretched the state of uncertainty in a monetary-production economy and the role of the general state of expectations, as an explicit independent variable, which colors all the functional relationships in the system. However, they recognize that the disruptive force of this expectational behavior occurs within a particular institutional framework which characterizes the economic system. Without the institutional element, the economy would be totally unpredictable. Therefore, for Post-Keynesians, the regularity of the system must be based, first, on the properties of money and contracting institutions; and second, on the roles of the financial sector and the state as stabilizing variables. As Carvalho says, institutions "enforce constraints on actions and events because they orient, constrain and direct the behavior of individuals(...)Institutions are a datum to each individual: they cannot originate from his solitary deliberations" (Carvalho, 1984, p. 271).

Whereas for Neo-Ricardians competition is the stabilizing factor, for Post-Keynesians the disequilibrating aspect of it is implicit in the subjective expectations of investing decision makers: "If... the state of expectation can and does change as the system moves irreversibly along the calendar time axis, (then) there is nothing in the logic of the dynamic theory which rules out violent instability" (Davidson and Kregel, 1980, p. 142). Therefore, only because there are institutions can the system move, for Post-Keynesians, with relative stability by preventing violent alterations in the state of expectations.

Certainly, in both schools there is a lack in the notion of competition process. For Neo-Ricardians the existence of a center of gravity as a stable pattern over time implies that the distabilizing aspect of expectations does not distabilize the level and composition of

demand. This is the reason why the method is exactly the same for Neo-Ricardians as for NeoClassicals: "the search for gravity centers".

For determining this center of gravity, Neo-Ricardians have to assume not only that technology and distribution of income are given, but also that the size and composition of output are fixed (Eatwell, 1977, pp. 62-63). On the other hand, once the center of gravity is determined, the long period analysis of output and employment based on the principle of effective demand has to take them as given (Eatwell, 1983, p. 125).

However, when technology and distribution of income are given, the very notion of change and the long-run influence of effective demand on accumulation cannot be grasped. Neo-Ricardians, because of this, disregard any possible influence of effective demand on the structure of the system. Here, the disassociation of the equilibrating process from changes in the economy is striking. Given the center of gravity there would be a correspondent unique level and composition of demand. Clearly. this center of gravity notion is timeless and the associated notion of competition loses its dynamic aspect.

For Post-Keynesians, since production takes time, the existence of money and uncertainty makes it possible to move the purchasing power through time. If expectations generate the possibility of change it must be possible to associate it with the struggle of capitalists haggling in the market place by creating better conditions of production, i.e. by introducing technical innovations. But, because they concentrate on institutions as the sole stabilizing factor, the role of the tendency of the rate of profit to equalize is not developed. By the same token, the notion of capital movement associated with the dynamic notion of competition is also lost. For them, competition is not linked to expectations.

IV. NEO-RICARDIANS AND POST-KEYNESIANS: A CONTROVERSY AROUND THE ROLE OF EXPECTATIONS

There is a tendency in the Neo-Ricardian literature to dismiss the Post-Keynesian emphasis on expectations and uncertainty with the argument that its analysis was as old as NeoClassical economics. Therefore, Keynes' and the Post-Keynesians' contribution to this would lose its aura of novelty. It is our contention that this is a misrepresentation of the

Post-Keynesian approach because it neglects the differences between their concept of expectations and that of the NeoClassicals. Expectations in the marginalist theory are usually linked to the analysis of pure exchange and do not directly relate to production. When expectations appear in NeoClassical theory they are usually treated in the context of perfect competition, where there are an infinite number of traders and infinitesimally small firms. Then, because each economic agent has to be a price taker, expectations only make sense if they are 'rational', i.e., when the average actual expectation coincides with its mathematical expression. The expectations of utility and profit maximizers have no dynamic component, because the "kaleidic" aspect of time does not play any role. As R. Bausor says with regard to the new NeoClassical fad, "rational expectations": "Constraining the current expected value to the future actual equilibrium value is equivalent to attributing knowledge of that equilibrium value. Such knowledge of future phenomena contradicts the basic epistemic asymmetry governing the structure of time; the future is not uncertain. Furthermore, since the mean of the forecast errors must equal zero, the currently expected equilibrium value, and the actual future long-run equilibrium value are logically equivalent. Thus the new orthodoxy's vision of rationality denies the logical antecedence of current expectation to future actualization. This logical dependence of the present on the future is the only guarantor that the future distribution will validate today's rationality. Yet precisely such dependence violates the most fundamental aspects of the epistemic foundations of time, ruptures the intertemporal structure of time, and destroys the apparent flow of time from its forward progress" (Bausor, 1983, p.8).

Post-Keynesians, on the other hand, concentrate exactly on this issue of uncertainty and connect expectations with the role they play for capitalists as investors. This transcends the pure behavioral analysis of traditional theory and opens the door to the role played by the expectations of the capitalist class, since investment is the prime mover in determining the levels of output and employment. Clearly, the use of expectations in a dynamic perspective can be associated with the class struggle and the competitive process in the economic system. Once expectations are linked to the capitalist class they should be analyzed in relation to competition in the sense that investment not only reflects the expectations about the future yield of capital goods, but also the economic purpose of each competitor in relation to the profit levels and the rate of growth.

There is another crucial theoretical point when expectations are not linked to competition. If we have to construct a theory of the long-run positions of the economy --as Neo-Ricardians argue--, the long-run theory of output and employment can be built up without any behavioral analysis, i.e. without taking into consideration the capitalists' struggle for markets through their investment decisions. The institutional nature of income distribution would be enough. However, the analysis of the effects of competition among investors on the level and composition of productive capacity of the economy, that is, on the movement of capital, is ignored.

If investment is linked to competitive expectations the behavior of the capitalist class becomes important as a "movens agens" with interesting implications for the concept of the center of gravity. At each point in time, the expectational behavior of the capitalist class as a whole crystallizes in specific investment decisions which give rise to definite levels of demand and growth as a result of the competitive process. In this context, the center of gravity is not perceived as a resting point around which the economy oscillates, but is itself moving over time, creating in this process specific coordinates in which the levels of output and employment find their place in the long-run. To have a long-run theory of output by incorporating the principle of effective demand, time must be included in the analysis. In the long-run, investment will create its own saving only through changes in the level of capacity and this will occur as a result of the corresponding changes in the conditions of production and also in the pattern of income distribution between social classes.

Therefore, if the center of gravity is to be a meaningful concept, it must be a category which makes it possible to apprehend the moving regularity of the system, i.e. it must give an idea about how the changing levels of demand and growth are to be viewed in the context of a persistent regularity of the economy. The determinants of this moving center cannot be invariant to the equilibrating process itself. Whatever systematic forces exist in the capitalist system it will imply not only a tendency to equalize the rate of profit but also a tendency towards a balanced growth path.[4] Not only definite levels of demand and

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[4] Marx qualifies this process in the following way: "The different spheres of production,..., constantly tend to an equilibrium: for, on the one hand, while each producer of a commodity is bound to produce a use-value, to satisfy a particular social want, and while the extent of these wants differs quantitatively, still there exists an inner relation which settles their

growth over time can be envisaged as a result of the competitive process, but also the direction of accumulation and the composition of demand. In each point of time investment only will reflect the level of capacity utilization in relation to what is considered to be its "normal" level; and the effect of investment on the level of capacity will be a matter of the path of the economy. Since investment responds to the capitalist behavior, there will not be any reason to expect a unique relationship between the level of output, on the one hand, and the rate of economic growth and the growth rate of the labor force, on the other.

V. NEO-RICARDIANS AND POST-KEYNESIANS: THE LONG-RUN POSITIVE THEORY OF EMPLOYMENT

In Eatwell's work (1983a) there is a suggestion of developing a positive theory of long-run employment based on Keynes' notion of long-run expectations. Although the critical context in which Eatwell puts forth his suggestion is to remove Keynes' ouvre from intertemporal equilibrium interpretation and to bring to light its long-run elements, it is remarkable in the sense that he uses long-run expectations as a strategic starting point for developing a long-run positive theory.[5] While so far for Neo-Ricardians long-run effective

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proportions into a regular system, and that system one of spontaneous growth; and, on the other hand, the law of the value of commodities ultimately determines how much of its disposable working-time society can expend on each particular class of commodities. But this constant tendency to equilibrium, of the various spheres of production, is exercised, only in the shape of a reaction against the constant upsetting of this equilibrium" (Marx, 1967, Vol. I. pp. 355-56).

[5] It is not necessarily true for Keynes that long-run expectations are used in the same strategic context. On the contrary, the treatment of the relationship of short and long-run expectations to the problem of persistence and stability seems to be tackled from a different angle than Eatwell's. Keynes distinguishes between two approaches. The first is a static model, where "disappointment-induced shifts" are removed, i.e. a state of expectation is "definite and constant and has lasted long enough for there to be no hangover from a previous state of expectations" (Keynes, 1936, p. 105). This model is used by Keynes, according to Davidson and Kregel as a "logical exercise" in order to "give full scope to the role played by effective demand" (Davidson and Kregel, 1980. p. 139). Eatwell's interpretation of Keynes' concept of long-run expectations refers only to this case and transforms the 'logical exercise' into a basis for a long-run theory. But he does not see that for Keynes long and short-run expectations are closely interconnected in the sense that there is some causal relationship going from short to long-run. In the

demand or investment played a pivotal role, it is now long-run expectations. By looking for support in Keynes' General Theory, Eatwell says: "The solution may be found in Keynes' own analysis of long period employment; it is **not** investment which is the independent variable, it is the 'state of long term expectations'" (Eatwell, 1983a, p.282).

This is interesting because it seems to indicate an approximation to the Post-Keynesian analysis of expectations. Another study -this time by the Post-Keynesians Davidson and Kregel-, gives hints that Keynes himself used expectations only in a pedagogical context to make his theory of effective demand more acceptable. They say: "In order to develop his most fundamental contribution --the theory of effective demand-- Keynes chose ... to elaborate on a model where it was assumed that once the state of expectations is given, it would continue for a sufficient length of time for the effect on employment to have worked itself out (...). This static Keynes model permitted the specifications of simple, stable functional relationships that a dynamic or shifting expectational model would have rendered impossible" (Davidson and Kregel, 1980, p.138). Their interpretative emphasis, however, is more centered around the disequilibrating aspects of expectations which would make it necessary to analyze the role of institutions as the sole stabilizing element in the modern capitalist system.

Eatwell, on the other hand, interprets Keynes' notion of long-run expectations in the same manner that he interprets competition, namely, as a stabilizing element of the

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above case long-run expectations are stable only because short-run expectations are "always fulfilled" (Keynes, 1973, Vol XI, p. 181). If they are not fulfilled and if this frustration is persistent, the possibility of changes in long-run expectations exists, which leads to Keynes' second approach. In this, expectational propensities shift over time (not necessarily due to the frustation of past expectations -here the causal relationship is multidimensional), inducing equilibrium to shift also over time. In the second approach, Keynes, as Davidson and Kregel point out, "envisioned his real world model as one of shifting equilibrium, a world in continuous movement without the necessity for plans of economic agents to ever be reconciled" (Davidson and Kregel, 1980, p.140-141). It is self evident that in this dynamic context of changing states of expectation, violent instability is not ruled out. The point to be made here is that Eatwell emphasizes Keynes' first approach only, because he is in search of a gravity center, only interested in the discovery of stability metaphors, which leads him to neglect Keynes' second approach.

economy. Inasmuch as he starts from the notion of long-run supply prices, when he adds the behavioral element of expectations, he has to introduce a notion of "the stability of the institutional environment" which would counteract and stabilize the erratic individualistic actions (Eatwell, 1983a, p.283). All disruptive elements for the Neo-Ricardian center of gravity argument must be avoided. Eatwell says: "There will be a level of capacity (embodying the socially necessary technique) corresponding to any given level of long term expectations. If existing capacity is above or below this level then the prospect of profit will induce investment to change the level of capacity to that appropriate to the state of expectations. The process may overshoot, as Keynes points out (...), but so long as the state of expectations may be supposed to be given then competition will tend to push the level of capacity toward that which is appropriate to sustain the long term level of employment (or, in a dynamic setting will push the rate of growth of capacity toward that rate compatible with the rate of growth of output implicit in the state of long term expectation (...). There is no reason to suppose that this will be a smooth process, but the usual oscillations and instabilities of multiplier-accelerator models will be damped by the **fixed** level of demand associated with the state of long term expectation" (Eatwell, 1983a, p.283.)

It is worth nothing that he explicitly keeps apart the analysis of expectations from the analysis of competition. But even though these are separated Eatwell reintroduces a notion by Joan Robinson which has been locked out so far by the Neo-Ricardian body of thought: "the concrete analysis of accumulation and the study of historical processes" (Eatwell, 1983a, p. 283).

To interpret Eatwell's exposition in a more dynamic sense, one could say that the long-run setting at each point of time-given all the structural parameters, like long-run expectations--corresponds, to a level of investment which is considered to be normal.

But, does not the level of long-run expectations change?; and what changes it? So far we have only a representation of the adjustment process of the level of capacity to a specific level of expectations. The concept of competition this implies is again that it is a stabilizing force which operates outside the very behavioral nature of capitalist's expectations. But it also implies a subordinated concept of competition because this only

enters the picture as soon as the level of long term expectations is already given. Only then do the forces of competition work themselves out through the system, creating a center of gravity, i.e. a tendency towards a uniform rate of profit and a tendency of the growth rate of capacity towards the state of long-run output which would correspond to a specific level of long-run expectations.

VI. LONG-RUN POSITION AND EFFECTIVE DEMAND: A POSSIBLE SYNTHESIS

6.1 Prices of production and balanced growth path

According to Garegnani, the Cambridge critique of capital theory is sufficient to reject the argument about the long-run tendency to the full employment of labor, since it invalidated the Neoclassical theory of distribution of output between wages and profits. Therefore, the door would be opened to develop a long-run theory of output based on the surplus approach to distribution.

Once the orthodox characterization of the operation of the market mechanism is rejected, there is no longer a theoretical basis for arguing that equilibrium prices and output imply or are associated with a full-employment situation in the labor market. By the same token, there are no forces of supply and demand which determine an equilibrium rate of profit and full-employment of capital's productive capacity. Garegnani says: "I believe that (the basic weaknesses of marginalist theory) lie in the very notion of substitutability between factors of production, from which the idea of the 'opposed forces' of demand and supply was derived". "It appears that the significance of the notion of equilibrium essentially depends on the existence, (...), of forces capable of bringing the economy towards the equilibrium position. (...) Thus to deny...the existence of any general tendency to equilibrium would seem to entail the rejection of that notion and, together with it, the rejection of the marginalist doctrine of demand and supply forces whose equilibrium would explain distribution, prices and outputs". He puts forward the proposal that "the task confronting the theoretician would then seem to be that of ascertaining the true central levels around which actual prices and outputs gravitate: the task, that is, of developing an alternative theory of distribution, prices and outputs, with the corresponding notion of long

period position, alternative to the marginalist 'equilibrium' of demand and supply". (Garegnani, 1980, pp. 10,11,18).

In the short-run, when the available capital cannot "change its physical shape", there will be no tendency to full-capacity-utilization and the question of whether this capacity is to be sufficient or not to employ the entire labor force, will remain. For Keynes, in the short period, "It is not the rate of interest, but the level of income which ensures equality between savings and investment" (Keynes, 1937a, p. 250).

Therefore the later variable (investment) can be considered, in each short period, as an independent variable or given.

Recently Garegnani has taken up his own task to bringing the principle of effective demand to long period analysis for developing a long period theory of output. In this horizon there would be no tendency towards full employment of labor and aggregate demand would influence the pace of accumulation (Garegnani, 1983). For him, a satisfactory theory of output would not require much more than: "a) an analysis of how investment determines saving through changes in the level of **productive capacity** (and not only through changes in the **level of utilization** of productive capacity); b) a study of the factors affecting the long-run levels of investment; (and) c) a study of the relation between consumption expenditure and aggregate income". He adds, "theoretical and applied studies have already prepared much material in the last two fields" (Garegnani, 1983, pp. 11-12).

Clearly, Garegnani's position that investment determines its own saving through changes in the level of productive capacity introduces a significant theoretical shift in the sense that it necessitates a balanced growth path associated with prices of production as a center of gravity. His long-run theory of output therefore implies the introduction of a second center of gravity, i.e. the balanced growth path, since this is what the equal rate of profit in this context calls for.

Let us assume that the rate of growth of the industry *i* is defined by:

$$g_i = s_i r_i \qquad (1)$$

where:

g_i reflects the existence of net investment different from zero, in order to have a proper representation of changes in the productive capacity level.

s_i ratio of investment (I_i) or saving (S_i) to profits (P_i).

r_i profit rate of industry i

i industry i (i=1,2,3,...,n)

Assuming now that the general rate of profit is:

$$r = r_i \quad \text{for all } i \tag{2}$$

which already presupposes the existence of long-run prices of production. Then, from (1), we will have:

$$\frac{g_1}{s_1} = \frac{g_2}{s_2} = \ldots = \frac{g_n}{s_n} = r \tag{3}$$

For the sake of simplicity, let us assume that the propensity to save out of profits of capitalists is the same, that is, $s_i = s_2 = \ldots = s_n$, then

$$g_1 = g_2 = \ldots = g_n \tag{4}$$

which means that all industries must grow at the same rate.

Moreover, this equation implies that the rate of growth in each industry must be equal to the rate of growth of the economy as a whole. The general rate of growth has to be a weighted average rate:

$$g = \sum_i^n \frac{K_i}{K} g_i \tag{5}$$

where:

K_i = stock of capital of industry i
K = stock of capital in the whole economy

Since $g_1 = g_2 = ... = gn$ and $\sum_i^n K_i = K$, it follows that

$$g = g_i \qquad (6)$$

In the more general case of different propensities to save, balanced growth will be ensured when the ratio of sectorial rate of growth to general rate of growth is kept constant and equal to the ratio of sectorial propensities to save to the average propensity to save, i.e., $(g_i/g)=(s_{i/}/s)$, because the profit rate of industry i is equal to the general rate of profit.

Therefore, since changes in the capacity level imply that there must be net investment greater than zero (or g>0), the sole concentration on prices of production as a center of gravity is not enough. A balanced growth path, then, is associated with equal rates of profit and proportionate growth.

But this balanced growth path is also insufficient to explain the dynamic movement of the capitalist system, since technology and income distribution are assumed to be given.[6] This implicit assumption in this new "center of gravity" presupposes that capitalist

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[6] Here we must mention Andrews' contribution to the analysis of price-determination in long-run conditions for competitive industries (Andrews, 1949, 1951, 1964). He argues that average direct costs of production for the normal range of output and the gross profit margin are the significant elements of price quotations by established businesses in a stable or growing market. The gross profit margin that a business can get is, according to him, limited by competition which is actually or potentially present in its market. Therefore, the normal costing-margin adopted by the businesses will give the highest level of price that they can expect to maintain against competition in the long-run. He considers the long-run as a "sufficient time being presumed to allow the entry into an 'industry' of any businesses whose founders consider this likely to be possible" (Andrews, 1951, p. 141). However, he makes the following warning: "In the case of a given business it seems a natural procedure to take things as they are and work out the implications in terms of the business' long-run capacity to

behave in such a way that they undertake investment in an appropriate level to reproduce the system without affecting its mentioned parameters.

Once the long-run theory of output is claimed under the idea that investment determines savings through variations in the level of productive capacity, the task of explaining what determines the level and composition of investment cannot be avoided. This latter variable cannot remain unexplained since it itself is accumulation. Therefore, the long-run theory of the output would have to be a derivative proposition from a more comprehensive theory of the accumulation process with income distribution and technology changing along historical time.

Since decisions concerning investment and production are undertaken by capitalists in an anarchic fashion, one must take into consideration the dynamic notion of competition and expectations of this ruling class. Therefore, the long-run balanced position of the economy can only be interpreted as a series of compensating errors in as much as there is no plan which coordinates the activities of individual capitalists. For this reason, the long-run position can only play the role of being a theoretical setting in wich to analyze the direction of the accumulation process and the possibility of changing it at each moment of time.

6.2 Centers of gravity and fluctuations: short-run versus long-run

Let us assume that the balanced rate of growth corresponds to the change in normal capacity levels, where excess demand is equal to zero. Since this rate and the uniform rate of profit are deterministically related to each other, we can argue that the period over which profits are equalized is also the period over which actual capacities are reduced to normal capacities, i.e., actual rates of growth are reduced to balanced rates of growth. Process and time have to be involved in the definition of these two centers of

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compete and to survive, assuming other relevant factors to remain unchanged. But it is impossible to do this without being well aware just how dangerous it is to take for granted the relative level of efficiency which exists at a particular time" (Andrews, 1951, p. 171).

gravity, since both of them (prices of production and balanced growth path) are presupposed by competition among capitals. Therefore the market cannot be ignored in the adjustment process of disequilibrium situations towards the long-run position.

Moreover, since under competitive conditions prices of production are not the actual prices nor is the balanced growth path the path on which the real economy remains, the equilibrating and disequilibrating movements created by competition cannot shape a convergent movement, but instead cause fluctuations around a definite long-run balanced path. The economy cannot deviate systematically from this path. What this means, however, is that for each set of income distribution, technology and capitalist decisions to invest associated with a steady rate of growth of demand, there will be an appropriate time during which the long-run position would be shaped only as a time-average. The length of this time will depend on the reactions of capitalists to spend and to produce vis-a-vis the short-run variations in demand. This is the way how short-run and long-run would be linked to each other[7].

The foregoing reasoning views the capitalist economy, regarding the actual behavior of prices and outputs, as a system in a permanent state of disequilibrium. Prices are such that different industrial branches earn different actual rates of profit. On the other hand, the overall pattern of demands and normal supplies are configured by capitalists' decisions about investment and, hence, about output levels. In an economy driven by the profit motive, consumer preferences are not relevant. For the same token, the actual and normal levels of employment are only derivative variables.

We can formalize this economy in a simple way by considering only two sectors: one produces means of production (X_1) and the other consumption goods (X_2). At time t, the quantities supplied of these commodities are $X_1(t)$ and $X_2(t)$, while the quantities demanded are as follows:

$$X_1^D(t) = a\left[X_1(t) + \dot{X}_1(t)\right] + a\left[X_2(t) + \dot{X}_2(t)\right] + \left[N(t) + \dot{N}(t)\right] i$$ **¡Error!Argumento de modificador no especificado.**

[7] This argument is also developed by A. Shaikh (1990).

and

$$X_2^D(t) = \left[N(t) + \dot{N}(t)\right] x_2$$ **¡Error!Argumento de modificador no especificado.**

where:

the dot indicates a time derivative;

(a,α) are input requirements of capital goods for sector 1 and sector 2, respectively;

(i, x_2) are per capita investment and consumption, determined with reference to normal output and employment; and

N is the level of employment.

Since the system is always in disequilibrium, then there will be excess demands in both sectors:

$$D(t) - S(t) = \begin{bmatrix} a & \boldsymbol{a} \\ 0 & 0 \end{bmatrix} \begin{bmatrix} X_1(t) \\ X_2(t) \end{bmatrix} + \begin{bmatrix} a & \boldsymbol{a} \\ 0 & 0 \end{bmatrix} \begin{bmatrix} \dot{X}_1(t) \\ \dot{X}_2(t) \end{bmatrix} + \left[N(t) + \dot{N}(t)\right] \begin{bmatrix} i \\ x_2 \end{bmatrix} - \begin{bmatrix} X_1(t) \\ X_2(t) \end{bmatrix}$$

Regarding the price system, at time t the absolute prices of capital and consumer goods and their corresponding time variations will be $\left[P_1(t), \dot{P}_1(t)\right]$ and $\left[P_2(t), \dot{P}_2(t)\right]$, respectively. On the other hand, the cost of producing in each sector, valuing inputs at market prices, will be as follows:

$$aP_1(t) + wb \quad \text{(sector 1)}$$

$$\boldsymbol{a}P_1(t) + w\boldsymbol{b} \quad \text{(sector 2)}$$

where:

w = money wage

$a, \boldsymbol{a}$ = input requirements of capital goods for sectors 1 and 2

$b, \boldsymbol{b}$ = labor inputs of sectors 1 and 2, respectively.

At time t, market prices are not necessarily equal to prices of production, then the unit profits in each sector will differ from those which correspond to the uniform rate of profit. Assuming that profits are estimated by valuing costs at current market prices, the vector of unit surplus profit [π(t)] will be:

$$p(t) = \begin{bmatrix} P_1(t) \\ P_2(t) \end{bmatrix} + \begin{bmatrix} \dot{P}_1(t) \\ \dot{P}_2(t) \end{bmatrix} - R \begin{bmatrix} a & 0 \\ a & 0 \end{bmatrix} \begin{bmatrix} P_1(t) \\ P_2(t) \end{bmatrix} - w \begin{bmatrix} b \\ b \end{bmatrix}$$

where:

R = uniform rate of profit plus one.

In as much as the capitalist system is profit-oriented, the sectoral production will increase (decrease) if it gives actual rates of profit greater (smaller) than the normal one. Similarly, the market prices of goods whose demand exceeds the current supply will increase and vice versa. These two propositions can be specified mathematically in the following way:[8]

(a) changes in activity levels are an increasing linear function of unit surplus profit, i.e.,

$$\begin{bmatrix} \dot{X}_1(t) \\ \dot{X}_2(t) \end{bmatrix} = -q \left\{ R \begin{bmatrix} a & 0 \\ a & 0 \end{bmatrix} \begin{bmatrix} P_1(t) \\ P_2(t) \end{bmatrix} + w \begin{bmatrix} b \\ b \end{bmatrix} - \begin{bmatrix} P_1(t) \\ P_2(t) \end{bmatrix} - \begin{bmatrix} \dot{P}_1(t) \\ \dot{P}_2(t) \end{bmatrix} \right\}$$

where:

θ is a diagonal matrix of production reaction coefficients.

(b) changes in market prices are an increasing linear function of excess demand, i.e.,

$$\begin{bmatrix}\dot{P}_1(t)\\ \dot{P}_2(t)\end{bmatrix} = M\left\{\begin{bmatrix}a & a\\ 0 & 0\end{bmatrix}\begin{bmatrix}X_1(t)\\ X_2(t)\end{bmatrix}+\begin{bmatrix}a & a\\ 0 & 0\end{bmatrix}\begin{bmatrix}\dot{X}_1(t)\\ \dot{X}_2(t)\end{bmatrix}+\left[N(t)+\dot{N}(t)\right]\begin{bmatrix}i\\ x_2\end{bmatrix}-\begin{bmatrix}X_1(t)\\ X_2(t)\end{bmatrix}\right\}$$

where:

M is a diagonal matrix of market reaction coefficients.

Both systems can be normalized by assuming $w=1$ and (the actual employment) $N(t)+\dot{N}(t)=1$. Then, relative prices, P(t), will be expressed in terms of labor commanded and relative quantities, X(t), in terms of unit of actual employment.

With compact matrix notation and rearranging, we have (see appendix 1).

$$I\,\dot{X}(t) - q\,\dot{P}(t) = -q(RA'-I)\,P(t) - q\,l$$

$$-MA\dot{X}(t) + I\,\dot{P}(t) = M(A-I)\;\;X(t) + Md$$

where

l = vector of labor inputs
d = vector of per capita final demand

or, in compact expression of the normalized equations, we have:

$$\dot{S}(t) = KS(t) + JQ$$

where

$$S(t) = \begin{bmatrix}\dot{X}(t)\\ \dot{P}(t)\end{bmatrix}, \quad Q = \begin{bmatrix}l\\ d\end{bmatrix}$$

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[8] An important contribution to this approach is Semmler and Flaschel (1985).

$$K = \begin{bmatrix} (I - Mq\,A)^{-1} & (I - MqA)^{-1}q \\ (I - MqA)^{-1}\,MA & (I - MqA)^{-1} \end{bmatrix} \begin{bmatrix} 0 & -q(RA'-I) \\ M(A-I) & 0 \end{bmatrix}$$

$$J = \begin{bmatrix} (I - Mq\,A)^{-1} & (I - Mq\,A)^{-1}q \\ (I - Mq\,A)^{-1}\,MA & (I - Mq\,A)^{-1} \end{bmatrix} \begin{bmatrix} -q & 0 \\ 0 & M \end{bmatrix}$$

The compact expression, $\dot{S}(t)$, constitutes a non-homogeneous simultaneous system of linear differential equations of first order and constant coefficients. This system has two remarkable characteristics.

First, its **particular solution** corresponds to the long-run position of the economy where no change in prices and quantities takes place. But what is important in this case is the fact that **prices of production are determined independently from equilibrium quantities**. Since in this long-run path the simultaneous determination is broken, market does not play any role. Production **prices are determined by the cost of production** and the **activity levels are determined by the state of techniques and the level of final demand or rate growth**.

Defining the particular solution as $\overline{P}$ and $\overline{X}$, our normalized equations will be reduced to:

$$0 = -q(RA'-I)\overline{P} - q\,l$$

$$0 = M(A-I)\overline{X} - Md$$

and, therefore in the long-run, production prices and the level of quantities produced, are:

$$\overline{P} = (I - RA')^{-1}\,l$$

$$\overline{X} = (I - A)^{-1}\,d$$

Second, according to the **complementary function** of the corresponding homogeneous system, **market prices are determined simultaneously with disequilibrium quantities**. But this disequilibrium system has to present an oscillatory movement for the reproduction balanced path to be its trend, with a time-average rate of profit and a time-average rate of growth. This will be the case for all eigen values of matrix K that are complex. The crucial point is then whether we obtain these kinds of characteristics roots when we introduce "realistic" assumptions about the rate of profit and reaction coefficients. In fact, when we simulate values of R significantly less than the maximum eigen value of matrix A, the system presents an oscillatory behavior on the condition that the reaction coefficients are not too high (see appendix 2). As noted, the adjustment process depends on the income distribution, on the technical condition of production and on the reaction coefficients corresponding to capitalist behavior.

6.3 Short-run theory of effective demand in a long-run setting

So far as the long-run position of the economy is concerned it will be clear that it must be characterized as an average result of the short-run movements of the economy. What happens at each historical moment of time determines a **moving long-run pattern**. Therefore, it is neither the main theoretical object of a comprehensive economic theory nor a particular invariant position towards which the economy tends. Moreover, this very notion of a moving long term position has to incorporate the interrelationship between the behavior of social classes and the institutional structure of the system.

Institutions provide the conditions for the possibility that a certain pattern of material allocation can be restored, enabling the system to reproduce itself. The regularity of its movements is explained by the forces which operate in the midst of the non coordinated behavior of the ruling class. Bounded by institutions, capitalists, through a competitive process, change the existing parameters of the structural system at each point in time creating in this way a moving long-run position. This also means that at each point of time, a **specific** long-run pattern can be envisaged, corresponding to a definite technology and income distribution. This specific long-run pattern only reflects the conditions required for the balanced growth of the economy with the mentioned parameters given, and it is a

changing result of the actual reproduction of the economy (Nell, 1984, see also A. Asimakopulos, 1993).

Taking the quantity element of the **particular solution** of our system of simultaneous differential equations and the corresponding labor inputs and normal level of employment, we can specify this mentioned long-run pattern as follows:

$$\begin{bmatrix} 1-a & \boldsymbol{a} & -i \\ 0 & 1 & -x_2 \\ -b & -\boldsymbol{b} & 1 \end{bmatrix} \begin{bmatrix} \overline{X}_1(t) \\ \overline{X}_2(t) \\ \overline{N}(t) \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

with $\overline{X}_1$, $\overline{X}_2$ and $\overline{N}$ growing at a steady rate. A necessary condition for non-trivial solutions is that the determinant of the coefficient matrix be equal to zero, that is:

$$ib - x_2\left[\boldsymbol{b} - a\boldsymbol{b} - \boldsymbol{a}b\right] + a - 1 = 0$$

hence,

$$i = \frac{1 - a - x_2\left[\boldsymbol{b}(1-a) - \boldsymbol{a}b\right]}{b}$$

or, alternatively

$$x_2 = \frac{1 - a - ib}{\boldsymbol{b}(1-a) - \boldsymbol{a}b}$$

By determining the level of investment on the basis of long term expectations, capitalists determine the level of normal employment and hence the level of investment per capita, which will remain unchanged for each given technology and income distribution. Moreover, since i is fixed by capitalists, the total and per capita consumption will be also determined in such a way that capitalists will have not problem of effective demand. Capitalists have complete freedom to determine the composition of output but its overall level is limited by technology (Pasinetti, 1981, 1983), provided that the latter was taken into consideration when long term expectations were formed. However, there is a problem with

the meaning of long term expectations vis-a-vis the given technology and income distribution.

Given distribution, one could argue that the level of investment corresponding to the normal level of capacity utilization entails the long term expectations of capitalists. Eatwell's new argument seems to imply this. On the one hand, long term expectations would have to explain a certain level of the expected rate of return from capital assets and, on the other hand, the structural model would have to explain the general rate of profit corresponding to the balanced growth path. These two rates, for validating the long-run position, must necessarily be equal, but in this case, the role of expectations would be theoretically useless.

The usefulness of expectations only becomes clear for understanding the moving long-run position if they are linked to competition through their effect on the level of productivity and real wages. Only with this link is the ambiguity of the relationship between short and long-run movements eliminated: the long-run is an outcome of the short-run in historical time.

That link of expectations with competition also eliminates Keynes' asymmetric treatment of these two categories (long-run and short-run) in relation to the actual generation of profits. "Having imputed long-term surplus to durable capital goods only, Keynes opens the door to the ambiguous 'Neoclassical synthesis' "(Sylos-Labini, 1984, p. 162). Certainly, Keynes' argument about the 'extreme precariousness' of long term expectations, and about the instability that they generate, as Sylos-Labini points out, is valid, but it does not solve the contradiction between his short-run and long-run concept of profit. On the one hand, he argues that "the excess of the value of the resulting output over the sum of its factor cost and its user cost is the profit or, ..., the income of entrepreneurs"(...). The entrepreneur’s profit thus defined is, as it should be, the quantity which he endeavors to maximize when he is deciding what amount of employment to offer" (Keynes, 1964, pp. 23-24).

This is necessarily a short-run concept. But on the other hand he introduces his notion of marginal efficiency of capital which must be inversely related to the quantity of the

corresponding capital good (Keynes, 1964, chapter 17). Clearly, in this context, short-run and long-run concepts of profit are not coherently analyzed on a common theoretical basis (Sylos-Labini, 1984).

But the most important point is that the incorporation of historical time into the analysis assigns to the long-run position, at each **present time**, the sole role of being a setting for a short-run analysis. Whereas the rate of exploitation (and, thus, the level of real wages and productivity of real labor) together with the balance between sectors are matters of long-run consideration, the actual level of employment and the principle of effective demand correspond to the short-run analysis.

With regard to these, Nell points out: "Short-run is a moment of historical time; at the point when the period begins, ..., there will exist a well defined level of productive capacity". In other words, "at whatever moment of historical time... the short period in question begins, it always has a well defined long period setting (...). Such a long period position functions as a benchmark or guide; it is what is expected to hold in the future, and present investments were made because in the past these wages, prices and profits were anticipated. But such benchmark earnings are an average; they are not expected to hold every minute. As with any norm, fluctuations around it can be expected. In the short-run therefore, deviations will take place (Nell, 1982, pp. 9,10,12.).

It is clear that the long period position could function as guide but only in relation to the short-run fluctuations of demand. If long-run variations in final demand, due to changes in the parameters through competition, create a moving long-run position, that guide or benchmark must not be expected to hold all the time and short-run variations in investment can also modify it. This possibility is theoretically justified once the separation between structural and behavioral analysis is eliminated by incorporating historical time.

Two conclusions can be derived from the foregoing theoretical reasoning:

(i) The theory of effective demand should be a theory of causes and consequences of the varying utilization of existing productive capacity, and

(ii) The analysis of the influence of demand on accumulation should be linked to an analysis of how the basic parameters of the economy change. The explanation of this change, in each short period for its corresponding long-run setting, should be thought of as being condensed in the level and composition of final demand through the level of real wages and the possibility of technological innovations.

VII. GENERAL CONCLUSIONS

For a short development of the policy implication of this analysis, we have to be aware that the structural setting and the behavioral pattern of the economy are closely linked via their common variable, namely, investment. It is neither sufficient to neglect one or the other, nor to separate them with the implication that the behavior of the agents accommodate only to a structural system. On the contrary, we have developed a notion of structurally generated behavior, in which the purpose of the competitive ruling class becomes an important determinant for the dynamic movement of key parameters in the economy. In this context we have introduced the concept of a second center of gravity which moves over time and represents a structural setting only because its temporal location is thought to be a guide for the short-run analysis.

This means that the object of economic analysis has to transcend the pure reconstruction of the structural setting and to introduce at each short period a discussion of the actual investment level as the catalyst for changes in the long term growth path. It is also clear that there is no reason to assume that this long term growth path will coincide with the long term growth of the labor force. **Not only the level of long term demand but also the direction and composition of accumulation will not guarantee that the economy will be at a full employment level of labor even if the stock of capital is fully utilized**.

Given the high probability that social unemployment, in the short-run and in the long-run, will accompany the economic growth path, it becomes necessary for the state to intervene not only with respect to the maintenance of the production and exchange conditions of the economy, but also with respect to the basic parameters of investment, namely, real wages and technology.

With respect to the first point, the state provides a legal institutional setting which counteracts the erratic individualism of the behavior of economic agent so as to smooth the effects of uncertainty on the decision horizon of the investors.

Concerning the last point, the state must have room to intervene in the structure of income distribution to affect the level of investment via changes in consumption. The direct influence of real wages through consumption on the investment level gives more theoretical sense to the principle of effective demand (Nell, 1984a).

The state will also have to intervene in the development and character of technological innovations in order to influence the direction and composition of accumulation and to soften technologically generated unemployment.

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APPENDIX 1

(1) Changes in activity levels are an increasing linear function of unit surplus profit.

$$\dot{X}(t) = -q\left[R\begin{pmatrix} a & 0 \\ a & 0 \end{pmatrix} P(t) + w\begin{pmatrix} b \\ b \end{pmatrix} - P(t) - \dot{P}(t) \right]$$

$$= -q\left[R\,A'P(t) + wl - P(t) - \dot{P}(t) \right]$$

$$\dot{X}(t) = -q(RA' - I)\; P(t) - wq\,l + q\,\dot{P}(t)$$

q diagonal matrix of production reaction coefficients

(2) Changes in market prices are an increasing linear function of excess demand

$$\dot{P}(t) = M\left[A\,X(t) + A\,\dot{X}(t) + (N_t + \dot{N}_t)\,d - X(t) \right]$$

$$= M\left[(A - I)\,X(t) + A\dot{X}(t) + d \right]$$

M diagonal matrix of market reaction coefficients

(3) Rearranging and normalizing w = 1, and the actual employment equal to 1:

$$I\;\dot{X}(t) - q\;\dot{P}(t) = -q\,(RA' - I)\;P(t) - q\,l$$
$$-MA\dot{X}(t) + I\;\dot{P}(t) = M(A - I)\;X(t) + Md$$

or

$$\begin{bmatrix} I & -q \\ -MA & I \end{bmatrix}\begin{bmatrix} \dot{X}(t) \\ \dot{P}(t) \end{bmatrix} = \begin{bmatrix} 0 & -q\,(RA' - I) \\ M(A - I) & 0 \end{bmatrix}\begin{bmatrix} X(t) \\ P(t) \end{bmatrix} + \begin{bmatrix} -q & 0 \\ 0 & M \end{bmatrix}\begin{bmatrix} l \\ d \end{bmatrix}$$

In compact matrix notation:

$$U\;\dot{S}(t) = V\;S(t) + ZQ$$

Then

$$\dot{S}(t) = \left[U^{-1} V\right] S(t) + \left[U^{-1} Z\right] Q$$

or

$$\dot{S}(t) = K S(t) + J Q$$

APPENDIX 2

(7) Simulation

Let:

$a = 0.8 \quad , \quad \boldsymbol{a} = 0.15 \quad ,$

$\boldsymbol{q} = M = mI,$

$$A = \begin{bmatrix} 0.8 & 0.15 \\ 0 & 0 \end{bmatrix}$$

$Max.\ R^* = 1.25$

(A) R = 1.20 and m = 0.10

$$(I - M\boldsymbol{q}\, A)^{-1} = \left[\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} - \begin{pmatrix} 0.008 & 0.0015 \\ 0 & 0 \end{pmatrix} \right] = \begin{bmatrix} 0.992 & -0.0015 \\ 0 & 1 \end{bmatrix}^{-1}$$

$$= \frac{1}{0.992} \begin{bmatrix} 1 & 0.0015 \\ 0 & 0.992 \end{bmatrix} = \begin{bmatrix} \dfrac{1}{0.992} & \dfrac{0.0015}{0.992} \\ 0 & 1 \end{bmatrix}$$

$$(I - M\boldsymbol{q}\, A)^{-1}\boldsymbol{q} = \begin{bmatrix} \dfrac{0.1}{0.992} & \dfrac{0.00015}{0.992} \\ 0 & 0.1 \end{bmatrix} \qquad MA = \begin{bmatrix} 0.08 & 0.015 \\ 0 & 0 \end{bmatrix}$$

$$(I - M\boldsymbol{q}\, A)^{-1}\, MA = \begin{bmatrix} \dfrac{0.08}{0.992} & \dfrac{0.015}{0.992} \\ 0 & 0 \end{bmatrix}$$

$$-\boldsymbol{q}(RA' - 1) = \left[\begin{pmatrix} -0.1 & 0 \\ 0 & -0.1 \end{pmatrix} \left(\begin{pmatrix} 0.96 & 0 \\ 0.18 & 0 \end{pmatrix} - \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix} \right) \right] = \left[\begin{pmatrix} -0.1 & 0 \\ 0 & -0.1 \end{pmatrix} \begin{pmatrix} -0.04 & 0 \\ 0.18 & -1 \end{pmatrix} \right]$$

$$= \begin{bmatrix} 0.004 & 0 \\ -0.018 & 0.1 \end{bmatrix}$$

$$M(A-I) = \begin{pmatrix} 0.1 & 0 \\ 0 & 0.1 \end{pmatrix} \begin{pmatrix} -0.2 & 0.15 \\ 0 & -1 \end{pmatrix} = \begin{pmatrix} -0.002 & 0.015 \\ 0 & -0.1 \end{pmatrix}$$

(A) $R = 1.20$

$m = 0.10$

$$K - l\,I = \begin{pmatrix} (-0.002 - l & 0.0015 & 0.004 & 0.0002 \\ 0 & (-0.01 - l) & -0.018 & 0.1 \\ -0.0202 & 0.015 & (0.0001 - l) & 0.0015 \\ 0 & -0.1 & 0 & -l \end{pmatrix}$$

Eigen values

Real	Imaginary
-0.0008	0.0092
-0.0008	-0.0092
-0.0052	0.1012
-0.0052	-0.1012

(B) $R = 1.15$

$m = 0.10$

$$K - l\,I = \begin{pmatrix} (-0.002 - l & 0.0015 & 0.008 & 0.0002 \\ 0 & (-0.01 - l) & -0.01725 & 0.1 \\ -0.0202 & 0.015 & (0.0004 - l) & 0.0015 \\ 0 & -0.1 & 0 & -l \end{pmatrix}$$

Eigen values

Real	Imaginary
-0.0006	0.0128
-0.0006	-0.0128
-0.0052	0.1012
-0.0052	-0.1012

(C) $R = 1.20$

$m = 1.10$

$$K - l\,I = \begin{pmatrix} (-7.563 - l) & -1.191 & 0.252 & 6.239 \\ 0 & (-1.21 - l) & -0.198 & 1.1 \\ -6.875 & -1.083 & (0.189 - l) & 5.672 \\ 0 & -1.1 & 0 & -l \end{pmatrix}$$

Eigen values

Real	Imaginary
-7.3400	0
-0.0483	0
-0.5979	0.8217
-0.5979	-0.8217

(D) $R = 1.15$

$m = 1.10$

$$K - l\,I = \begin{pmatrix} (-7.563 - l) & -1.191 & 1.674 & 6.239 \\ 0 & (-1.21 - l) & -0.18975 & 1.1 \\ 6.875 & -1.083 & (1.442 - l) & 5.672 \\ 0 & -1.1 & 0 & -l \end{pmatrix}$$

Eigen values

Real	Imaginary
-8.6928	0
2.7977	0
-0.7180	1.1559
-0.7180	-1.1559