

KALDOR ON GROWTH AS A DEMAND-INDUCED PROCESS.

Preliminary Draft

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The aim of this paper is to reconstruct Kaldor's conception of economic growth as a demand-induced process, which is at the core of his account of the principle of cumulative causation¹. In his view, the expansion of manufacturing is subject to a peculiar dynamics of self-reinforcing nature which results from the interaction between the dynamics of efficiency, as given by the joint effect of Young's increasing returns, learning and technical progress, and the dynamics of demand. In short, the growth of demand leads to efficiency gains which induce further growth of demand and so on. Thus, the expansion of manufacturing appears as a *circular process of cumulative causation*. To this, Kaldor adds the hypothesis that manufacturing is the *engine of growth*. On this basis, economic growth is demand-induced, and not resource-constrained, i.e., "it is to be explained by the growth of demand ..and not by the (exogenously given) growth rates of the factors of production, labour and capital, combined with some (exogenously given) technical progress over time"². In this regard, Kaldor's proposal is to bring in the *principle of effective demand* as the 'closure' of the system.

In the paper, I first examine and clarify the content of the central hypothesis that manufacturing is the engine of growth, and, second, I critically discuss Kaldor's view of effective demand as the leading factor (and weak link) of economic growth. As regards the latter, Kaldor's view appears as rather inconsistent and contradictory. When looked at in terms of the investment-savings process, he conceives the principle of effective demand as purely short-run, transitory phenomenon. Over the long-run, he argues, "Ricardo's presumption that capitalists only save in order to invest" is more relevant, and "the rate of growth of 'external' demand --that coming from outside the capitalist sector-- is a more basic determinant of both the rate of accumulation and the growth of output and employment of the 'capitalist' or 'industrial' sectors of the world economy"³. Indeed, this view of Kaldor constitutes the basis of his conception of economic growth as 'export-led'. As far as the investment-saving nexus is concerned, Kaldor's position comes close to the 'classical version of Say's Law' and, in particular, to Marx's conception where the possibility of a (short-run) demand break in the 'normal' process of expanded reproduction of the economic system is explicitly considered. On the other hand, this position can be traced back to Kaldor's own growth models of the fifties where equilibrium growth is seen effectively as a full-employment equilibrium. In the paper, I examine this issue carefully. While fully acknowledging the relevance of foreign trade in the growth process --indeed, in the cumulative causation view of it--, I argue that Kaldor's position is theoretically unsatisfactory. A consistent closure of the principle of cumulative causation requires to consider the principle of effective demand as a theory of normal output, i.e., to consider it --the investment-savings nexus-- in a

¹See Kaldor, 1966, 1972, 1978, 1978b, 1979, 1981, 1981b, 1985. For a discussion of the principle of cumulative causation, both in itself and in relation with the analysis of the classical economists, see Ricoy, 1987, 1994, 1998.

²This Kaldor sees as "the more basic cause of the difference of view between the neo-classical and Keynesian (or post-Keynesian) schools of thought: the question, that is, whether one regards economic growth as the resultant of demand (i.e. the growth of markets) or of (exogenously given) changes in resource-endowment." (Kaldor, 1975, p. 895).

³See Kaldor, 1978 b , pp. 164-5.

long-period setting; this, in turn, requires to restore the central role of capital investment as the fundamental 'independent' variable in the process of generation of income and, as such, as the key, leading, factor in economic growth itself. In this regard, I bring to the fore some arguments from Kaldor's late writings, as well as from previous ones, which point precisely in this direction.

I. Manufacturing as the Engine of Growth.

The engine of growth hypothesis rests on the nature of 'capital' and labour, as resources used in production, and on the role of expansion of manufacturing in generating, mobilising and re-allocating them. If capital and labour were exogenously given, the circular and cumulative dynamics of manufacturing would not materialise and economic growth would be effectively resource-constrained as the 'conventional equilibrium theory' has it. But, in Kaldor's alternative view, the expansion of manufacturing entails "*a net addition* to the effective use of resources and *not just a transfer* of resources from use to another" (Kaldor, 1975, p. 894), and, as such, is the determining factor of the global expansion of the economic system; this is so in so far as

"(a) the capital required for industrial production [is] self-generated --the accumulation of capital [is] an aspect, or a by-product, of the growth of output; (b) the labour engaged in industry [has] no true opportunity-cost outside industry, on account of the prevalence of disguised unemployment both in agriculture and services." (Kaldor, 1975, pp. 894-5)

As Kaldor argues in the course of the debate over his Inaugural Lecture of 1966

".. the manufacturing sector has the peculiarity that it *accumulates its own resources*, i.e., it manufactures the capital goods which it uses and provides the savings for it through the profits which its own investment activities generate. ... in its expansion, it absorbs labour from the agricultural and/or the services sector of the economy, where labour, in the relevant sense of the word, is in surplus. As a result of that, the growth of output of the manufacturing sector does not cause a diminution of output of these other sectors, but on the contrary, it stimulates their growth." (Kaldor, 1981, p. 430; emphasis added)

In this view, capital and labour cannot be taken as exogenously given, independently of the expansion of manufacturing; on the contrary, they are generated, mobilised and developed in the course of such expansion; their (effective) quantity, quality and sectoral distribution depend on - -are determined by-- the (structural) dynamics of manufacturing.

The supply of labour available for employment in manufacturing is generated endogenously in the course of the expansion of that sector --in response to demand--as a result of the dynamics of productivity, of the changes in the participation rate and of the absorption of the reserves of surplus labour existing in the non-industrial sectors; as Kaldor argues as regards the latter

"Labour is common to all activities, but there is always 'surplus labour' in agriculture -- labour can be withdrawn without any adverse effect on output and normally with a favourable effect. (This can be expressed by saying that normally the marginal product of labour working on the land is zero or negative. The reason is that the density of population living on the land is generally such that output actually produced does not

require the *effective* employment of more than a fraction of the labour force available). There is not such a thing as 'full employment' of labour except as a short phenomenon in a given area (or locality)." (Kaldor, 1979, p. 279; italics in the original)

Thus, in so far as there is 'surplus labour' in other sectors, such as agriculture and services, labour cannot be considered fully and optimally employed --"there is no such a thing as an optimal allocation of labour". As manufacturing expands, labour is drawn from the 'surplus sectors' and is transferred --reallocated-- to other uses where its contribution to the economy's output is greater than before. Moreover, as a consequence of such a transfer, efficiency in the 'surplus sectors' gets enhanced. In fact, employment in the non-industrial sectors is a residual determined by the requirements of labour of manufacturing. In this view, full employment is a short-run, transitory phenomenon, while unemployment, be it open or disguised, constitutes the 'normal position' of the system. As Kaldor argues as regards the existence of 'disguised unemployment',

"... an economy does not cease to be demand-constrained merely because it attains 'full employment' in some conventionally accepted sense of the term. The main reason for this is that mainly because imperfect competition there is a large amount of disguised unemployment even in the most advanced countries, as shown by the fact that there is always a *large queue of people in low-paid jobs who move to higher paid jobs as openings become available*. As a result of this *the normal response to an increased demand for labour, say in manufacturing, is that there is an automatic transfer from low paid jobs in services* (the loss of which moreover need not result in any measurable loss of output since it would be offset by the rise in productivity of those remaining in the labour-losing sectors). ... A reduction in open unemployment will therefore tend to be associated with a *diminution in disguised unemployment* that may be quantitatively just as large." (Kaldor, 1985, pp. 35-6; emphasis added)

On this basis, and with reference to the "break in the productivity trend in the United States after 1973", Kaldor advances a "possible explanation" in terms of "the extraordinary increase in the number of jobs in the consumer service sectors --in restaurants, cafes, and so on-- together with the stagnant or falling employment in manufacturing"; as he argues,

"It is quite possible ... that the big rise in employment in small-scale service enterprises was a *consequence* of a lower overall demand for labour, or a lower demand in the relatively high earning manufacturing industries." (Kaldor, 1985, p. 36; italics in the original)

As for 'capital', in no significant sense can it be considered as an endowment --as a scarce resource-- given independently of economic activity. Capital, as produced means of production, is output, and, as such, the result of productive activity; in this sense, the growth of output and the growth of capital are one and the same process; this is but the manifestation of the fact that the social process of production is a process of '*production of commodities by means of commodities*'.

"... while capital is the most important condition or prerequisite of high efficiency production, one cannot *explain* differences in the wealth of nations in terms of differences of 'capital endowment' of the different countries, in the same manner as one *can* explain

differences in population density by reference to differing endowments of natural resources, such a climate, rainfall, geology, etc. For in contrast to natural resources which exist independently of human activities, 'capital endowment' is necessarily the *result* of such activities. It is impossible therefore to separate cause and effect: it is just as sensible --indeed more enlightening-- to say that capital accumulation has resulted from industrial development than that it was the cause of such development. For taking manufacturing activities as a whole, the growth of output and the accumulation of capital are merely different aspects of the a single process. Capitalist production is 'production of commodities by commodities'; individual industrial activities make use of goods produced by other industrial processes as their inputs, and provide outputs which (in the great majority of cases) serve as the inputs of further processes." (Kaldor, 1978b, p. 155; italics in the original)

In short, in the course of its expansion, manufacturing generates (accumulates) its own capital. Thus, the capital required for the expansion of industrial output is 'self-generated'. Moreover, as demand and production expand, the greater is the inducement to invest in capacity --in 'capital'-- and the greater are the profits that provide the savings to finance such investment.

"The country which become rich and attained high incomes per head was a country which become 'well-endowed' with capital and in which therefore the capital/labour ratio become very high. But this capital was largely accumulated out of reinvested profits in consequence of increasing demand, and the ability to use so much capital in relation to labour is vary largely a reflection of the scale of activities and not of the relative price of capital and labour." (Kaldor, 1979, p. 284)

Indeed, in this view, the explanation of the 'comparative advantage' of different countries or regions, and, hence, of industrial location and trade patterns, in terms of 'capital endowments' does not get us very far; as Kaldor argues,

"one can, and does, say that industrial production requires a great deal of capital --both in terms of plant and machinery, and of human skills, resulting from education-- but in explaining such differences in 'capital endowment' it is difficult to separate cause from effect. It is as sensible --and perhaps more sensible-- to say that capital accumulation results from economic development as that it is a cause of development. Anyhow, the two proceed side by side. Accumulation is largely financed out of business profits; the growth of demand in turn is largely responsible for providing both the inducements to invest capital in industry and also the means of financing it. We cannot therefore say that industries will be located in regions which are 'well endowed' with capital resources for reasons other than industrial development itself. It was not the result of the particular thriftiness of the inhabitants of a region, or of a particularly high degree of initial inequality in the distribution of income which 'induced' a high savings-ratio, that some regions become rich while others remained poor. The capital needed for industrialisation was largely provided by the very same individuals who acquired wealth as a result of the process of development, and not prior to it"⁴.

⁴Kaldor, 1970, as reprinted in Kaldor, 1978, p. 142.

In sum, in the course of its expansion, manufacturing generates its own resources, it mobilises labour and accumulates capital. The growth of manufacturing does represent 'a net addition to the effective use of resources', and, hence, to the overall growth of the economy. Therefore, in this view, economic growth is not

"... confined by the availability of capital and labour; on the contrary, the amount of capital accumulated, and the amount of labour employed at any one time, will be the resultant of the growth of external demand over a long series of past periods which permitted the capital accumulation to take place that was required for enabling the amount of labour to be employed and the level of output to be reached which was (or could be) attained in the current period."⁵ (Kaldor, 1979, p. 283)

Thus, in clear contrast with the view implied in the 'conventional equilibrium framework', in Kaldor's view, economic growth, as determined by the expansion of manufacturing, appears as a demand-induced, and not as a resource-constrained, process. At any one time the economy is characterised by a given productive capacity --'quantity of capital'-- with a certain sectoral distribution and by a certain allocation and quality of the labour force. These characteristics (resources) entail a short-run limit to the capacity to produce and, hence, to the capacity to grow. But, the fundamental point here is that neither of these characteristics constitutes an 'endowment' exogenously given; they can be considered to be given but only as the result or heritage of the past, as the heritage of history. As Kaldor argues,

"... time is a continuing and irreversible process; .. it is impossible to assume the constancy of anything *over* time, such as the supply of labour or capital, the psychological preferences for commodities, the nature and number of commodities, or technical knowledge. All these things are in a continuous process of change but the forces that make for change are endogenous not exogenous to the system. The only true exogenous factor is *whatever exists at a given moment of time*, as a heritage of the past. This includes all material things, whether the products of nature, or man, or a combination of them, i.e., all forms of capital, as embodied in building, factories, or machines; the available supply of labour --workers, managers, scientists, with all kinds of qualifications and skill. All these in existence at the present moment, the heritage of all past history, determine what can be produced or created in the immediate future, say in the next day, and, that, together with what exists now, determines the range of alternatives for the day after, and so on. Taking the very near future, anything that can be produced is determined, or rather limited, by the heritage of the past: the stocks of flour at the hands of the bakers today will determine the bread that can be produced tomorrow. The heritage of the past is the one truly exogenous factor, and its influence will determine future events to an extent that varies *inversely* with the distance of the future period from the present. Thus our ability to predict what *can* happen or what is likely to happen becomes progressively less as we consider the more distant future as against the nearer future." (Kaldor, 1985, pp. 61-2; italics in the original)

⁵As regards to Kaldor's reference to 'external demand' see below.

Thus, according to Kaldor

"Except in a purely short-term sense, total output can never be *confined* by resources. At any one time, there is, or there may be, a maximum potential output for the world as a whole resulting from past history which has determined the existing network of institutions and organisations, the different kinds of plant and equipment available and their geographical distribution, as well as the distribution of the available labour in all the different areas and their educational endowments and skills. Over a period, there may be a maximum rate of growth of production in some key sectors of the economy (such as the food-producing sectors) which limits the sustainable rates of growth of other sectors. If that happens, it must be on account of the scarcity of natural resources, and the impossibility of substituting capital goods for natural resources at more than a certain speed, on account of an insufficiency of land-saving innovations. But if take an inclusive view, neither capital nor labour can limit either the level, or the rate of growth, over a longer period. Capital accumulation can always be speeded up --or rather it automatically *gets* speeded up, with a faster growth of production. In the case of labour, there is no such a thing as an 'optimal' distribution of the labour force --with each man making a greater contribution to output in his existing employment than in any alternative employment-- since every reorganisation of production resulting from overall expansion or new investment will mean the transfer of some of the labour force to new employments where its contributions to production will be greater than before."⁶

In sum, the economic process --hence, economic growth-- reveals itself as *path-dependent*, as a process that *depends in an essential way on its own history*. In this view, the activity from 'today' to 'tomorrow' defines the possibilities for 'the day after tomorrow' that, in fact, *would have not existed, had it not been for the previous developments*. The resources characterising the present state of the economy represent a particular stage in its own process of development. They are rooted in its own history, and, at the same time, they define its possibilities of development in the future. The amount, the quality and the sectoral composition of both labour and capital are created in the process of growth. They are the result of the growth and composition of demand in the past, and, particularly, of the rate and composition of past investment. In short, they are the result of the past performance of the economic system in terms of growth and structural change. In turn, those 'resources' define the potential for future growth and development. Given the present 'capacity constraints', the growth performance of the system can vary over a wide range depending on the actual dynamics of demand, on the actual rate and composition of investment, and, eventually, it will show up in some constellation of 'resources' --'capacity constraints'-- at any one time in the future. In this regard, it may be clarifying to think of different countries or regions that start off 'today' with the same 'resource (capacity) constraints'. Their respective constraints 'tomorrow' and, hence, their potentialities for 'the day after tomorrow' will differ according to their respective growth performances from 'today to tomorrow'. Indeed, the differences in growth performances are enhanced by the (endogenous) rise of efficiency which results from the expansion of manufacturing as it leads to mechanisation and structural change

⁶Kaldor, 1972, as reprinted in Kaldor, 1978, pp. 194-5, italics in the original.

(Young's increasing returns), to learning and technical progress which '*open new opportunities for further change which would have not existed otherwise*'. As Kaldor argues,

"the state of the economy at any one time cannot be 'predicted' except as a result of the sequence of events that led up to it; the successive chains in that sequence might not have occurred but for the new opportunities created by previous developments." (Kaldor, 1985, p. 68)

Moreover,

"the existence of increasing returns, even if confined to particular sectors of an economy, such as manufacturing, are bound to cause very large differences to the reaction pattern of the economy". (Kaldor, 1985, p. 68)

As Kaldor establishes in his discussion of the 'limitations of Keynes' General Theory'

"... owing to the importance of increasing returns in manufacturing, the development of an industrial system is largely self-generated, where, owing to a powerful feed-back mechanism, 'events in the recent past cannot be explained in terms of the actual sequence through which the system has progressed; history enters into the causation of events in an essential way'." (Kaldor, 1982, p. 4)

This conception of economic growth contrasts clearly with that implied in the 'conventional equilibrium framework'. As Kaldor argues as regards the view of resources as exogenously given --independently of productive activity, independently of history-- and, in sum, as regards the notion of equilibrium implied in such a framework,

"this notion asserts that the operation of economic forces is constrained by a set of exogenous variables which are given from the outside, so to speak, and which remain stable over time. In other words, equilibrium theory assumes that the environment in which economic forces operate is imposed on the economic system from the outside, and it is something different from a historical heritage; indeed, as is often emphasised, the exogenous variables that determine the nature of the equilibrium are independent of history in their more important characteristics. Any given constellation of such exogenous variables, will inevitably lead, perhaps through a succession of steps (succession of 'temporary equilibria'), to a *unique point* of final equilibrium, the exact nature of which, both as regards the price system and output system, can be deduced from the 'data', the set of exogenous variables, the operation of which is confined by strictly formulated axioms."⁷ (Kaldor, 1985, p. 62; italics in the original)

In contrast, in Kaldor's alternative view, once it is realised that "every change in the use of resources -every reorganisation of productive activities- creates the opportunity for a further change *which would not have existed otherwise* ",

"the notion of an 'optimum allocation of resources' --when every particular resource makes as great or greater contribution to output in its actual use as in any alternative use-- becomes a meaningless and contradictory notion: the pattern of the use of resources at any one time can be no more than a link in the chain of an unending sequence and the

⁷See also Kaldor, 1972, as reprinted in Kaldor, 1978, p. 185.

very distinction, vital to equilibrium economics, between resource-creation and resource-allocation loses its validity. The whole view of the economic process as a medium for the 'allocation of scarce means between alternative uses' falls apart -except perhaps for the consideration of short-run problems, where the framework of social organisation and the distribution of the major part of available 'resources', such as durable equipment and trained or educated labour, can be treated as given as a heritage of the past, and the effects of current decisions on future development are ignored."⁸ (italics in the original)

Initially, Kaldor presents his development of the principle of cumulative causation as a definite hypothesis on economic growth centred on the interaction the structural dynamics of the conditions of production and demand. On this basis, economic growth is a causal (path-dependent), circular and cumulative process of technical and structural change; and, as it results from 'the operation of forces engendered the economic system', economic growth is essentially endogenous. Moreover, economic growth is demand-induced and not resource-constrained. Yet, as the previous quotes make clear, the analysis has a much wider significance. It entails a conception of the economic process and of the workings of the market mechanism alternative to those implied in the 'conventional equilibrium framework'; as Kaldor establishes, the latter

"regards the essence of the economic problem as the allocation of scarce resources between different uses; but it is the *rate of creation* of resources (and the factors that promote it or inhibit it) rather than their allocation which are the really important issues to be considered." (Kaldor, 1981, pp. 432-3; italics in the original)

It is precisely in this sense that Kaldor refers to 'growth theory' as against 'equilibrium theory' that the conventional approach implies; according to him, the former is

"primarily concerned with the manner of operation of the (both exogenous and endogenous) forces in a market economy making for continuous change and development." (Kaldor, 1979, p. 274)

In Kaldor's alternative view of the economic process, the market mechanism is

"... not primarily an instrument for *allocating* resources. It is primarily an instrument for transmitting impulses to change; it would be truer to say that the market mechanism creates or generates resources than it allocates them." ((Kaldor, 1979, p. 280; italics in the original)

In the same line and with reference to the analysis of Allyn Young of "increasing returns and economic progress",

"... the main function of markets is to transmit impulses to economic change, and thereby *create* more resources through enlarging the scope for specialisation and the division of labour --rather than to secure an optimum allocation of a *given* quantum of resources. ... with increasing returns continual change is self-generated and 'propagates itself in a cumulative way'. Hence no analysis which describes the forces operating on the economy as tending towards a state of equilibrium can capture the manner in which the development of markets make for perpetual change." (Kaldor, 1978, p. xxv; italics in the original)

⁸Kaldor, 1972, as reprinted in Kaldor, 1978, p. 187-8.

In this alternative view of the economic process, investment --capital accumulation-- plays a central role. On the one hand, it is the fundamental means for restructuring economic activity, creating productive capacity and generating and transmitting technical progress; in this sense, investment is the essential element that endows the system with the *flexibility* required for its transformation. On the other hand, investment is the main determinant of the dynamics of effective demand, and, as such, constitutes the *essential link* in the response of the system to the opportunities for further change endogenously generated.

II. Effective Demand.

Given his view of economic growth as demand-induced, it was only natural for Kaldor to bring in the principle of effective demand as 'closure' of his system. In fact, he himself refers to his analysis in terms of the "marriage of the Smith-Young doctrine on increasing returns with the Keynesian doctrine of effective demand"⁹. In this regard, and with reference to Young's analysis on "increasing returns and economic progress", Kaldor writes

"Lacking a theory of income generation such as was supplied by Keynes in the General Theory eight years later, he thought that the necessary additional condition to ensure a continued chain reaction is to be found in the nature of reciprocal demand and supply functions [...] The essential point missing from Young presentation, and which can only be supplied on the basis of Keynesian economics, is the addition of incomes resulting from the accumulation of capital (in other words, from investment expenditures) combined with the induced character of such investment which arises more or less as a by-product of changes in the organisation of production"¹⁰.

By combining the dynamics of 'efficiency', as it results from Young's increasing return, learning and technical progress, with the principle of effective demand in a dynamic setting, Kaldor provides the definitive development of the principle of cumulative causation. In this view, the growth of demand constitutes the 'leading factor' of the 'self-reinforcing dynamics' internal to manufacturing and, hence, of overall economic growth. The growth of demand determines the growth of output and leads to a rising efficiency of production. Whether the process keeps its momentum and becomes cumulative, or gets stopped (and probably reversed) depends on the 'next round' of demand, on the response of demand, particularly of investment, to the inducement to further growth provided by the rise in efficiency; in this sense, the growth of demand (as the 'leading factor') is the 'weak-link' of the internal dynamics of manufacturing and of economic growth. Thus, effective demand provides the circular process of cumulative causation with a 'degree of openness' that contrasts with the 'continuity' that, owing to Say's Law, both Smith's and Young's analyses implied.

⁹Kaldor, 1972, as reprinted in Kaldor, 1978, p. 194.

¹⁰Kaldor, 1972, as reprinted in Kaldor, 1978, p. 188, 192. As regards the "induced character of investment", see below.

In the last analysis, the key role of demand rests on the 'independence' of capital accumulation, of investment, as the driving force of the process of economic growth. As already stated, capital accumulation is central to structural change and technical progress. Moreover, it adds both to demand and to capacity. On this basis, the potential for a continuous self-expansion of the system finds no limit. This, indeed, points to the key role of the capital-goods sector in the process of economic development¹¹. As Kaldor argues in this regard,

"it is a peculiarity of a highly developed industrial sector that it largely provides the goods on which capital expenditure is spent, and thereby generates a demand for its own products in the very process of supplying them. Once a country attains the stage of industrialisation at which it largely provides for its own needs in plant and machinery and not just in consumer goods the rate of growth of demand for its products will tend to be stepped up very considerably, since the expansion of capacity in the investment sector by itself raises the rate of growth of demand for the products of its own sector, and thereby *provides the incentives and the means*, for further expansion."¹²

The fact that investment is the fundamental independent variable of the system does not mean that the rate of accumulation is fixed, invariant with respect to economic conditions; actually, the assumed degrees of freedom in investment behaviour are to a large extent the reflection of the many factors, economic and non-economic, that influence investment decisions. In this respect, the growth of markets is likely to be one of the main elements influencing investment decisions. In the context of the "self-reinforcing dynamics" of manufacturing it is the response of investment to the growth of markets and to the resulting rise in efficiency along with the more direct dependence of consumption on industrial expansion what accounts for the 'reverse link' and, thus, for the circular and cumulative nature of that dynamics itself¹³.

The rise in (quantitative) efficiency that results from industrial expansion, leads to the growth of consumer demand through the rise in real income and through the expansion of consumption to lower brackets of the income distribution structure. Owing to the different growth elasticities of demand for different goods and for different income levels, the overall growth of consumption and, therefore, the overall growth effect of the interaction 'industrial expansion-consumption' depend largely on the composition of consumption in terms both of goods and of income groups. In this regard, at high income levels there is a tendency for the growth of demand to slow down and, even, to stagnate; this tendency, however, is continuously being overcome by the 'innovation' and 'quality-differentiation' effects of efficiency (technical change, structural diversification); these effects are, thus, crucial to keep the 'drive' for expansion alive. (Pasinetti, 1981). As regards capital goods, the 'price' and 'quality-obsolescence' effects of technical change constitute fundamental determinants of investment activity. In addition, investment is induced by industrial growth itself both through the interindustry expansion of markets and through the growth of consumption it entails.

¹¹On this, see below.

¹²Kaldor, 1966, as reprinted in Kaldor, 1978, pp. 113-4; emphasis added.

¹³I am not considering here the key role of foreign trade; on this, see below.

In the sequence 'industrial growth - consumption - investment - industrial growth', the growth of real wages is of special significance; for, wages are both income and cost of production (Kalecki, 1939). Notice, however, that the concepts involved are different; as income, the real wage is purchasing power --'consumption real wage'--, and, as cost, it is 'own-product real wage'; thus the relative income-cost effect of real wages will be modified by the dynamics of the terms of trade between the sectors concerned. As income, the growth of real wages leads to demand and output growth which lead to productivity growth; as a result, it may lead to higher rates of investment (Nell, 1985; Sylos-Labini, 1985). The overall effect of wages as income on the expansion of the economy will depend on the 'degree of articulation' of the productive system with respect to 'mass-consumption' sectors (De Janvry and Sadoulet, 1983). As cost, the growth of wages has two contradictory effects. On the one hand, it may induce a process of dynamic substitution à la Marx, thus, leading to a higher rate of investment and productivity (Nell, 1985; Sylos-Labini, 1985). On the basis of its 'substitution' and 'demand' effects, the growth of real wages can be seen to imply a 'cumulative causation' pattern of growth. The growth of real wages leads to demand growth and to dynamic substitution, therefore, to investment and to productivity growth which, in turn, lead to higher growth of wages and so on and so forth. On the other hand, to the extent that the growth of real wages 'eats up' in profits, it may result in a lower rate of investment.

The notion that investment adds both to capacity and to demand along with its 'independence' with respect to the process of income generation provide the basic structure of the equilibrium growth models in the Keynesian tradition. The fundamental insight of these models rests precisely in showing that, as long as accumulation keeps its pace, the continuous self-expansion of the system is possible. As Joan Robinson puts it,

"The point of view embodied in the acceleration principle suggests that investment keeps up with the expected rate of growth of sales. But the rate of accumulation is itself the main determinant of the rate of growth of income, and therefore of sales. Carrying itself by its own bootstraps is just what a capitalist economy *can* do. [...] The rate of accumulation, below the limit set by the tolerable minimum of real-wage rates, can be whatever it likes"¹⁴.

In effect, the starting point of the Keynesian models of equilibrium growth is the idea that investment adds both to demand and to productive capacity: Assuming a given level of capacity utilisation, the models go on showing that equilibrium growth is possible, that there exists a rate of accumulation which ensures the equality of effective demand and productive capacity through time, i.e., a rate of accumulation which ensures a continuous utilisation of productive capacity at the initial given level. This gives rise to the notion of the 'warranted rate of growth'. Conversely, the analysis can be seen as showing that, for any given rate of accumulation, there exists a set of parameters of the system that ensures the existence of an equilibrium growth path. Actually, this is the way the analysis proceeds when the possibility of full employment equilibrium growth is examined. Assuming a natural growth rate, achieving full employment through time requires a

¹⁴Robinson, 1962, p. 13, italics in the original.

rate of accumulation that makes the warranted rate equal to the natural rate. The question, then, asserts itself of whether there exists a set of parameters compatible with that rate of accumulation. In this respect, the analysis goes a step further by making the overall propensity to save dependent on the pattern of income distribution between profits and wages. This is achieved by assuming a different propensity to save for capitalists (out of profits) and workers (out of wages) so that for each possible distribution pattern there corresponds a different overall propensity to save and, therefore, a different warranted rate of growth. In this sense we can refer to the 'warranted' pattern of income distribution. Thus, the initial question turns into one about the existence of a warranted income distribution which entails the equality between the (associated) warranted growth rate and the natural rate, and, thereby, ensuring both the given level of capacity utilisation and the full employment of the labour force through time. Within this framework, consumption is kept in the background as the residual that closes the gap of effective demand. This follows from the assumed different behaviour of capitalists and workers as regards saving and, therefore, as regards consumption; both overall savings and overall consumption are endogenously determined by the fixed capacity and the full employment condition on the basis of the required-warranted income distribution.

As it stands, the analysis remains at the level of the 'consistency conditions' of the dynamics of the system, that is, at the level of the conditions required for full employment equilibrium growth; there is no presumption of actual behaviour --investment is simply taken at the required level-- neither that such state of affairs will actually occur; this is precisely the way in which Pasinetti conceives the analysis; as he establishes,

"I should look ... at the previous analysis simply and more generally as a logical framework to answer interesting questions about what *ought* to happen if full employment is to be kept over time, more than as a behavioural theory expressing what actually happens". (Pasinetti, 1974, p. 119; italics in the original)

By contrast, in his original presentation of the model of 1955-6 as well as in his subsequent formulations of it, Kaldor sees equilibrium growth as being effectively, even necessarily, a full employment equilibrium; in this regard, the distribution mechanism --variations in the income distribution pattern-- constitutes the basic equilibrating force¹⁵.

II.1. Kaldor on Full Employment Growth.

A distinctive feature of Kaldor's work is the empirical motivation which guides his theoretical developments. In his view, theoretical analysis must concentrate in developing hypothesis capable of explaining the 'stylised facts' or 'empirical regularities' of actual economies. In fact, his theory of distribution and growth constitutes, to a great extent, an attempt to explain why in

¹⁵ Here the discussion refers strictly to Kaldor's growth models as they stand. I am not taking into account the argument presented in Commendatore et.al. (2003) as regards Kaldor's views expressed in his Memorandum to the Radcliffe Report where "he considered Government policies necessary to pursue stability and growth" (Commendatore et. al., p. 112).

the historical experience of advanced capitalist economies, "periods of severe unemployment were exceptional and not the rule", so that such an experience seems to be characterised by full employment, or near full employment, conditions; in his view,

"it strongly suggests that forces must have been at work which operated on the relationship between effective demand and supply, or between the propensity to invest and to save, in such a way as to yield an equilibrium level of employment that was fairly close to, if not equal to, the full employment level." (Kaldor, 1964, p. 169-70)

In this regard, Kaldor explicitly establishes that the mechanism at work is the "Keynesian mechanism of income generation" and, therefore, that there is a "perfectly good Keynesian explanation for the prevalence of full employment or near full employment conditions"; in his view, that explanation rests on "variations on the strength of demand" which "cause variations in the level of prices in relation to costs", and, thereby, variations in the distribution of income between profits and wages, which, in turn,

"have a powerful influence on the community's propensity to save or to consume, and thereby adjust the level of effective demand so as to make it coincide with the available supply, as determined by resources available." (Kaldor, 1964, p. 170)

In short, in Kaldor's view, the warranted rate of growth is brought into equality with the natural rate through variations in the overall propensity to save which result from changes in the pattern of income distribution between profits and wages as a consequence of changes in the intensity of effective demand --in the pressure of demand on supply--, which cause the level of prices to vary in relation to the level of money wages; actually, this is the fundamental notion implied in Kaldor's proposition that

"the principle of the Multiplier ... [can] be alternative applied to a determination of the relation between prices and wages, if the level of output and employment is taken as given, or the determination of the level of employment, if distribution (i.e., the relation between prices and wage) is taken as given. ... these two uses of the Multiplier principle are not as incompatible as would appear at first sight: the Keynesian technique ... can be used for both purposes, provided the one is conceived as a short-run theory and the other as a long-run theory --or rather, the one is used in the framework of a static model, and the other in the framework of a dynamic growth model." (Kaldor, 1955-6, p. 94)

The starting point of Kaldor's analysis is the Keynesian theory income generation centred on the basic view that incomes are the resultant of expenditure decisions --savings are the resultant of investment decisions-- and not the other way round; this Kaldor sees as, "perhaps, the most important difference between 'Keynesian' and 'pre-Keynesian' habits of thought"¹⁶. His proposal is, thus, based on the Keynesian hypothesis that investment, or rather, the ratio of investment to output, can be treated as the independent variable of the system. Now, according to Kaldor, while in the context of the static (short-run) equilibrium, the adjustment of savings to investment is

¹⁶Kaldor, 1955-6, p. 94.

brought about by variations in income, in the degree of capacity utilisation, in the context of the (long-run) dynamic equilibrium, assumed to be a full-employment equilibrium, such an adjustment takes place through change in prices in relation to wages, that is, in profit margins (or in the real wage). On the basis of latter adjustment mechanism,

" a rise in investment, and thus in total demand, will raise prices and profit margins, and thus reduce real consumption, whilst a fall in investment, and thus in total demand, causes a fall in prices (relatively to the wage level) and thereby generates a compensating rise in total consumption. Assuming flexible prices (or rather flexible profit margins) the system is thus stable at full employment." (Kaldor, 1955-6, p. 95)

More strictly, the stability of the system depends on the additional condition that the propensity to save out of wages is lower than the propensity to save out of profits. On the other hand, the proposed adjustment mechanism is limited by given minimum acceptable values both for wages and profits. According to Kaldor, within those limits, in the (long-run) dynamic equilibrium of the system

" ... the Keynesian determinants, the propensities to invest and to save, and the theory of the multiplier, are more likely to operate so as to determine, not the level of employment, but the distribution of income between profits and wages at full employment. The very fact that prices rise or fall under the influence of demand creates an automatic tendency towards full employment ... " (Kaldor, 1964, p. 170)

In the same line, and as regards the specific nature of the dynamic equilibrium of the system as a full employment equilibrium, Kaldor argues,

"... excepting for periods in which the process of growth through capital accumulation ... is altogether interrupted, the system cannot long operate in a state of (Keynesian) unemployment equilibrium, because at any level of output short of 'full employment' the aggregate demand associated with the particular level of output will exceed the aggregate supply price of that output, and thus lead to an expansion in output until a state of full employment is reached. In a state of full employment, on the other hand, aggregate demand and aggregate supply (in real terms) are brought into equality through the movements of prices in relation to prime costs, i.e., the relation of prices to wages. ... The assumption that there can be no under-employment equilibrium in period in which the rate of growth of capital and income is normal is not arbitrary; it is based on the view that an equilibrium of steady growth is inconsistent with under-employment equilibrium. "¹⁷

This analysis of Kaldor is rather confusing. It seems clear, however, that, except on the assumption that investment is given (kept) at the level corresponding to the full employment of labour, as given by the natural rate of growth, the analysis does not show any tendency of the system to achieve full employment equilibrium. In other words, the analysis shows a tendency to full employment if and only if this is assumed beforehand. Notice, in this regard, that the adjustment mechanism does not refer strictly or necessarily to the level of full employment; actually, in perfectly general terms, such a mechanism refers to the maintenance through time of

¹⁷Kaldor, 1957, as reprinted in Kaldor, 1960, pp. 262-3.

level of utilisation of capacity once investment is kept at a given level. The analysis shows that the warranted rate of growth is not unique; indeed, on this basis, the analysis also shows, that, within certain limits, for any given natural rate of growth, there exists a warranted rate which equals that natural rate; in this sense, the analysis shows the *possibility* that the dynamic equilibrium of the system be effectively a full employment equilibrium; thus, if it is assumed that the rate of investment is given to the level corresponding to full employment of labour, i.e., to the level corresponding to the natural rate of growth, the adjustment through variations in the pattern of income distribution 'ensures' the full employment dynamic equilibrium.

Be it as it may, the adjustment mechanism is rather unsatisfactory. It should be expected that such mechanism be independent of the a priori assumptions that the rate of accumulation is given and that the degree of utilisation of productive capacity is kept over time. Yet, this is not the case; actually, the warranted pattern of income distribution cannot be defined except by reference both to the assumed rate of accumulation and to the assumed degree of capacity utilisation. In other words, it is only possible to maintain that the real wage and real consumption are determined as a residual through changes in prices in relation to money wages only if the rate of accumulation and the degree of capacity utilisation are kept through time at the given level. Once these assumptions are dropped, changes in the pattern of income distribution and, thus, in consumption will be reflected in changes in the level of capacity utilisation; whatever happens next will depend on the response of investment to those changes. In this regard, there is no apparent reason to suppose that the adjustment mechanism in the 'long-run' differs from that in the 'short-run'. Actually, it seems more plausible to suppose that the flexibility of productive capacity in response to changes in the level of activity is, if anything, higher in the 'long-run' --in the context of the dynamics of the system-- than in the 'short-run'. Different levels of demand, different rates of investment, and, therefore, different levels of utilisation of capacity over a period will result in different rates of expansion of capacity, and, hence, in a different potential and in a different 'constraint' for further growth in subsequent periods; in other words, the rate of expansion of capacity, and, hence, the potential for, and the 'restrictions' to, the future growth of the system depend on the levels of demand, of investment, and, therefore, on the levels of activity, of utilisation of capacity kept over a certain period.

In subsequent formulations of the model, Kaldor tries to reconstruct his view of the dynamic equilibrium of the system as necessarily of full employment from 'outside' the model itself¹⁸. In this regard, he makes use of the device of the 'representative firm', which he assumes "to behave as a small-scale replica of the economy as whole"; thus, he assumes that the firm "employs a constant fraction of the total employed labour force" and that variations of its output "reflect equivalent variations in total output". Moreover, it is assumed that its structure of costs -- consisting only of labour costs-- is such that "average and marginal prime costs are constant up to the point where the optimum utilisation of capacity is reached". Finally, Kaldor assumes that it

¹⁸See, for instance, Kaldor, 1961; as reprinted in Kaldor, 1978.

is the *supply of labour*, and not productive capacity, the *effective restriction* to the expansion of the firm's output (in the short-run); thus, it is assumed that the *maximum capacity of production entails the full employment of labour*. On this basis, the (short-run) supply curve of the firm is horizontal up to the point of maximum capacity/ full employment and becomes vertical afterwards. Notice that this must imply that the *rate of accumulation in the past has equalled the natural rate of growth*.

As regards demand, Kaldor assumes a 'Keynesian function' based on the operation of the multiplier and on the adjustment mechanism through variations in income distribution just seen. For a given level of investment, such a function shows, for each level of output, the excess of price over cost --price-wage ratio or profit margin-- that makes real effective demand equal to output. In the simple Keynesian case, in which the propensity to save is independent of income distribution, the demand function is vertical. By contrast, if the propensities to save out of profits and out of wages are assumed to differ, such that the overall propensity to save depends on the pattern of income distribution, and assuming s_w lower than s_p , the demand function is decreasing: if price --the price-wage ratio-- falls, the level of effective demand which results from the given level of investment increases.

The equilibrium level of income --of output and of utilisation of productive capacity-- is given by the intersection of the demand and supply curves. Given the assumption as regards costs, equilibrium depends on the position of the demand curve, and, hence, on the level of investment and on the value of the multiplier coefficient. This analysis of Kaldor is nothing else than a reformulation, more or less sophisticated, of the short-run (static) problem of the determination of the equilibrium level of income --of the level of activity or of capacity utilisation. In any case, the analysis makes it clear that the adjustment mechanism through variations in income distribution refers strictly to maintenance and stability of the level of utilisation of productive capacity.

Next, Kaldor argues that, in the formulation of the demand function there must be taken into account the fact that investment is not entirely independent of the level (or growth) of output, i.e., that investment is in part 'autonomous' and in part 'induced'; in Kaldor's words,

"In fact, it is the rate of growth of output which governs investment demand; and, in addition to the growth of output due to the natural rate of growth of the economy, investment in the short period will also vary with the change in output reflecting a change in the level of unemployment. Such 'induced' investment will only come into operation, however, when the degree of utilisation of capacity permits a normal rate of profit to be earned; in other words, receipts cover, or more than cover, *total* costs, including 'normal' profits on the capital invested." (Kaldor, 1978, p. 27; italics in the original)

Once induced investment is considered, the demand curve becomes increasing from the intersection of average costs and the supply curve onwards. On this basis, Kaldor shows that the

firm --the 'economy'-- can be in stable equilibrium only in two situations, namely, in full employment or "under slump conditions when induced investment is zero". Therefore,

"... it is impossible to conceive of a *moving* equilibrium of growth being an under-employment equilibrium. Such an equilibrium is necessarily one where productive capacity is growing, and where therefore induced investment is positive ... " (Kaldor, 1978, p. 28; italics in the original)

Thus, Kaldor's proposition that the (long-run) dynamic equilibrium of the system is a full employment equilibrium rests essentially on the *induced nature of investment*. According to him, the interaction between the multiplier and the accelerator leads necessarily to full employment of labour; in other words, the 'endogenous' rate of growth resulting from such an interaction equals necessarily the natural rate of growth; as Kaldor himself argues,

" ... starting from any given state of surplus labour and under-employment, continued growth, as determined by these endogenous factors, will necessarily lead to full employment sooner or later; and once full employment rules, continued growth involves that the 'accelerator-multiplier' mechanism becomes 'tethered' (through variations in the share of profits and through the imposition of a quasi-endogenous growth rate of demand) to the natural rate of growth." (Kaldor, 1978, p. 56)

Again, this analysis of Kaldor does not seem very convincing. As already pointed out, the fact that *productive capacity is given at the level corresponding to full employment of labour* must imply that *its rate of growth in the past has equalled the natural rate of growth*; in this sense, the argument is based precisely in the conclusion which, in fact, is intended to be reached. On the other hand, the analysis rests on the imposition of factors of a dynamic nature in an essentially static scheme. Moreover, in so far as those dynamic factors as well as their effects refer only to the demand side, the analysis is totally asymmetric; as Kaldor himself points out, economic growth entails a growing productive capacity; thus, an argument which intends to show the tendency of the system to a full employment equilibrium growth on the basis of a given capacity does not seem very relevant. Actually, in the context of the dynamics of the system, the fundamental question is precisely *to make it compatible the growth of demand with the growth of productive capacity*; on this basis, the additional question is raised of whether the *maintenance of the 'demand-capacity' equilibrium through time implies or not the full employment of labour*; indeed, this amounts simply to a *reformulation of the original Harrod problem*.

In other formulations of the model, Kaldor seems to address the dynamics of the system in terms of the *need of an adequate response of investment* in such a way as to ensure the continuous growth of the system; in this regard, and most significantly, he refers to the need for a certain 'buoyancy' in investment behaviour; in his own words,

".. the prime mover in the process of economic growth is the readiness to absorb technical change combined with the willingness to invest capital in business ventures. ... the process

of accumulation is the resultant of innumerable investment decisions made by entrepreneurs ... Any act of investment the outcome of which is necessarily uncertain at the time the decisions are taken, implies an act of faith --it involves a favourable judgment concerning the future course of markets, as well as the future relationship of prices and costs. Unless entrepreneurs are willing to revise their estimates of future sales and profits upwards in the light of current experience --unless they are imbued with sufficient optimism to react favourably to favourable events, and to increase the amount of capital invested in response to an increase in current sales and profits-- it is difficult to envisage the growth of production and capital as a continuous process. .. In order that there should be continued growth, it is necessary ...to suppose both that, on the one hand, output increases as a result of capital investment and, on the other hand, investment takes place in response to an increase in output. ... in a model which makes the amount of profits actually generated in the production process dependent on the rate of investment and makes the rate of investment in turn dependent on the growth of profits, it is necessary to postulate a certain minimum 'buoyancy' in entrepreneurial behaviour in order to ensure that the investment necessary to generate the profits which call forth a further increase in investment in the next period actually *does* take place, so that productivity, total output, profits and investment continue to grow." (Kaldor, 1960, pp. 270-2; italics in the original)

And, as he goes on,

"Without assuming a certain minimum 'buoyancy', the mere accrual of fresh investment opportunities through technical progress will not alone ensure the continued growth in production --since the latter requires in addition that effective demand and profits should increase sufficiently to match the growth in potential supply, and thus keep the process of accumulation going." (Kaldor, 1960, pp. 272-3; italics in the original)

II. 2. Kaldor on the Growth of Demand and Cumulative Causation.

In a conception which, arguably, has its basis in the view just discussed of equilibrium growth as full employment equilibrium, Kaldor, in his consideration of the 'principle of effective demand' as 'closure' of his analysis of the growth process in terms of the principle of cumulative causation, adopts a position which comes close to the 'classical version of Say's law'; consider, for instance, the following argument.

"In retrospect I believe it to have been unfortunate that the very success of Keynes's ideas in connection with the savings/investment multiplier diverted attention from the 'foreign trade multiplier' which, over longer periods, is a far more important and basic factor in explaining the growth and rhythm of industrial development. For over longer periods Ricardo's presumption that capitalist *only save in order to invest*, and hence the proportion of profits saved would adapt to changes in the profitability of investment, seems to me more relevant; the *limitation of effective demand due to over-saving is a short-run (or cyclical) phenomenon*, whereas the rate of growth of 'external' demand is a more basic, long run determinant of both the rate of accumulation and the growth of output and employment in the 'capitalist' or 'industrial' sectors of the world economy." (Kaldor, 1978b, pp. 164-5; emphasis added)¹⁹

¹⁹.See also Kaldor, 1979, p. 283.

As can be seen, Kaldor conceives the 'principle of effective demand' --the investment-savings process-- strictly in terms of the 'short-run'. That is, such principle is conceived specifically as a theory of the determination of the degree of utilisation of productive capacity. Under this perspective, the level of output can be at any level; thus, the possibility is open for the existence of an '*underemployment equilibrium*', characterised by the sub-utilisation of capacity, and which will be the result of the *lack of demand*, i.e., of the existence of a '*demand-gap*', as a consequence of *oversaving*. As such, that equilibrium is necessarily regarded as a '*short-run*', *transitory, phenomenon*. By contrast, from the perspective of 'long-run position' of the economy --of the 'normal' path of reproduction of the system--, and to all significant effects, savings and investment are seen as identical in the specific sense that 'savings entail --is-- accumulation'.

In this conception, the growth of *external demand*, i.e., that which is generated *outside* the industrial ('capitalist') sector, which in a developed economy is given essentially by the growth of *net exports*, constitutes the fundamental determinant of economic growth. This view is at the core of Kaldor's conception of economic growth as '*export-led*' developed in terms of the *foreign trade multiplier* considered in a dynamic context. In this regard, Kaldor establishes the need to consider the economy consisting of two sectors; according to him, in the context of a growth model, the *logical corollary* of considering a single sector under Keynesian assumptions is that "the equilibrium growth rate [is] given exogenously (or quasi-exogenously) by the 'natural rate of growth' ... which in turn [implies] that the model [assumes] full employment"²⁰. On the contrary, in a two-sector model, in which "the 'Keynesian' features of the economy only apply to industrial ('capitalist') sector, or in a sector with foreign trade, this is no longer so; as *part of the incomes generated inside the industrial sector are spent in commodities produced in other sectors or in imported commodities*, the dynamics of the industrial sector is necessarily subject to an *internal demand-gap*; as a consequence its (effective) growth depends on --is determined by-- the growth of external demand, i.e., that generated outside the sector. In Kaldor's words,

"... both the level and the rate of growth of output of the capitalist sector is dependent on the level, or rate of growth, of the effective demand coming from *outside* the capitalist sector. The pace at which both output and employment can grow and at which industrial capital will accumulate will thus be dependent on the growth of exogenous demand."

(Kaldor, 1978b, p. 162; italics in the original).

This view of Kaldor is in open contradiction with his conception that the manufacturing sector is the 'engine of growth', that is, with the notion that the growth of output and productivity in the 'non-industrial' and, hence, overall economic growth are determined by the expansion of the manufacturing sector.

As regards external trade, it is clear that the growth of exports is partly determined by the growth of world markets, which, from the perspective of a given country, can be seen effectively as exogenous. However, once the interdependence among countries --or the world economy as a

²⁰See Kaldor, 1978, pp. xxi-xxii.

whole-- is taken into account, such an exogeneity disappears. Thus, if we consider only two countries, it is obvious that the growth of exports of one of them is directly given by the growth of imports of the other, in such a way that the growth of their respective external demands depends on the growth of both of them taken together. Moreover, the growth of exports of any given country depends essentially on its share in the different markets, which, in turn, is determined by its own competitiveness and on the sectoral (and geographical) composition of trade –given the growth-elasticities of demand for the different commodities (and of the different countries) and on the potential and opportunity for learning and technical progress of its production. Therefore, in the last instance, the growth of its exports is determined by the structural dynamics of productivity (of technical progress) internal to itself and, hence, by the own process of growth and structural transformation.

In any case, as we have just seen, at the highest level of abstraction, Kaldor sees the question of effective demand –the investment-saving process— from a purely short-run perspective, in terms of the possible occurrence of a ‘demand-gap’ due to oversavings. In this sense, his position is close to the Marx’s conception of crises, where these are seen as breaks in the normal process of reproduction of the system. In fact, from the perspective of that process, Kaldor’s position is equivalent to the classical version of Say’s law, where investment is determined (given) by the surplus that is not consumed. In this regard, with reference to Ricardo’s proposition that “there is no amount of capital which may not be employed in a country because demand is only limited by production”, Kaldor explicitly states that such a proposition

" is basically untrue, if the term 'country' is taken to apply to any actual country, such as Britain. This is because the demand generated by incomes earned in production *in* Britain can never be sufficient to match the production that gave rise to those incomes, since part of the demand thus generated is for goods produced in other countries, i.e., for imports." (Kaldor, 1978b, p. 163; italics in the original).

Thus, as a consequence of those leakages of income to other sectors or countries,

"the capitalist sector, beyond a certain stage, cannot grow on its own, lifting itself by its own bootstraps." (Kaldor, 1978b, p. 162).

The qualification “beyond a certain stage” makes no sense, unless it means ‘from the moment there is some demand of goods produced in other sectors or countries by part of the industrial sector’ (on the basis of incomes generated within it). Given the need of the manufacturing sector, derived from the requirements of its own reproduction, of obtaining inputs from other sectors (or countries), it is evident that such a demand takes place from ‘the very beginning’ and not ‘beyond a certain stage’. Notice that the problem with Kaldor’s argument is the same as that of Malthus on the ‘lack of demand’ on the face of an excessive accumulation. In sum, Kaldor’s argument entails that in absence of such leakages, economic growth will take place as an unending and continuous process of circular and cumulative causation. This position is to be assimilated to that of Smith and Young, in which, the rate of growth remains indeterminate. In

fact, once the dependence of the growth of net exports and on the non-industrial sectors on the expansion of manufacturing, such a indeterminacy remains even in presence of the leakages of income from the latter sector, be it to other sector or to other countries.

It is my contention that a consistent closure of the hypothesis of cumulative causation requires that the principle of effective demand be considered in a 'long-period' setting. In this regard, investment must be seen as the fundamental 'independent' variable in the process of income generation, as the fundamental variable of decision of entrepreneurs, and, as such, as the 'determining factor' and, at the same time, as the 'weak link' of the growth process. In the same line, the investment-saving process must be considered in terms of the process of income generation –in terms of the variations of the level (or rate of growth) of income and not of the relative prices or of the rate of interest. This, on the other hand, is precisely what Kaldor himself proposes with reference to Allyn Young's analysis, namely, the need to consider a theory of income generation and, in particular, the need in Young's analysis the principle of effective demand. Thus, as regards the condition of the 'reciprocal demand' that Young considers as the necessary condition for the existence and the continuity of the self-sustained, circular and cumulative process of growth that results from the operation of increasing returns, Kaldor states,

"Lacking a theory of income generation such as was supplied by Keynes in the General Theory eight years later, he thought that the necessary additional condition to ensure a continued chain reaction is to be found in the nature of reciprocal demand and supply functions ... " (Kaldor, 1972, as reprinted in Kaldor, 1978, p. 188).

And, later on, Kaldor continues,

"The essential point missing from Young presentation, and which can only be supplied on the basis of Keynesian economics, is the addition of incomes resulting from the accumulation of capital (in other words, from investment expenditures) combined with the induced character of such investment which arises more or less as a by-product of changes in the organisation of production." (*Ibid.*, p. 192).

It could be thought that the reference to 'induced investment' must be understood in the same way as in the previous discussion both of the models of equilibrium growth and of the principle of cumulative causation, namely, in the sense of an actual (and automatic) realization of such an investment. However, as the own context of Kaldor's argument makes clear, such reference has the meaning of a necessary and *potential* condition for the existence and continuity of the self-sustained dynamics of the manufacturing sector. The potential nature of induced investment is made clear in the following argument of Kaldor:

" ... the process of endogenous self-sustained growth requires both a certain *inelasticity* of expectations concerning *prices* (in regard to primary products) and also a certain elasticity of expectations concerning the *volume* of sales (in regard to manufactures). Induced investment reflecting the 'acceleration principle' is a property of the latter; induced investment reflecting the price-stabilising effect of the operation of traders is a property of the former. And it requires, above all, a monetary and banking system that enables capital

investment to increase in response to inducements, so as to generate the savings required to finance additional investment out of the *addition* to production and incomes. This is the real significance of the invention of paper money and of credit creation through the banking system. It provided the precondition of self-sustained growth. With a purely metallic currency, where the supply of money is given irrespective of the demand for credit, the ability of the system to expand in response to profit opportunities is far more narrowly confined." (*Ibid.*, p. 194, italics in the original).

In the same line, Kaldor refers to the fragility inherent to the process of self-sustained growth in the following terms,

"... it is evident ... that the 'self-sustained growth' of decentralised economic systems, largely directed not by exogenous factors, but by the growth and the constellation of demand, is a fragile thing which will only proceed in a satisfactory manner if a number of favourable factors are present simultaneously: such as merchants who are ready to absorb stocks in the short-run rather than to allow prices to fall too far --because experience has taught them that market prices have some long-run stability-- and manufacturers who respond to the stimulus of growing sales with an expansion of productive capacity, because experience has taught them that over a period markets are growing and not stable. It also requires a 'passive' monetary and banking system which allows the money supply to grow in automatic response to an increased demand for credit." (*Ibid.*, p. 196).

Again, I argue that a consistent closure of the hypothesis of cumulative causation requires that the principle of effective demand be considered in a 'normal' or 'long period' context. In the first place, investment must be considered as the fundamental 'independent' variable of the system, which is not to be understood as if it were given and invariant to economic conditions; the 'degrees of freedom' assumed in (the dynamics) of investment are only the reflection of the many factors, both economic and non-economic, that influence investment decisions. As regards the adjustment of the growth of productive capacity to the growth of demand, it is to be seen to take place through variations in the degree of utilisation of capacity itself; this, I argue, is in line with Kaldor's own view of economic growth as a path-dependent process. Moreover, in Kaldor's later writings, we find some hints that point precisely in this direction. First, in his view of the workings of market as a mechanism that transmits impulses to change, Kaldor states explicitly that such a transmission takes place essentially through 'quantity signals' rather than 'price signals'; in his own words, "the signal that causes an economic 'agent' to do something different ... is always a quantity, not a *price* signal". As he himself argues,

"Prices are set by producers on normal costs of production (or rather, on the costs calculated by reference to some normal utilisation of capacity), including a customary percentage added for profit; and within limits, the producer will not change his price as a result of a faster (or slower) increase in orders. In any case, in the actual adjustment of supply and demand, prices play a very subordinate role, if any. If prices do change in the course of the adjustment, these are incidental to the process of adjustment, and more likely to be a temporary rather than a permanent feature unless the commodity happens to be one in which increasing returns are important, in which case the increase in demand might indirectly lead to a reduction of prices." (Kaldor, 1985, p 25)

Here we find a clear conception of prices in terms of the ‘normal’ or ‘long period’ position of the system. As Kaldor argues, prices are fixed on the basis of the normal conditions of production, including a normal or ‘customary’ margin of profits; moreover, at least implicitly, prices are determined for given (normal) conditions of demand and the possible changes in those conditions affect prices through the induced changes in costs. At the same time, Kaldor refers to the adjustment of the system to its ‘normal’ or ‘long period’ position; as already noted, Kaldor sees such an adjustment –the adjustment of supply to demand– as a process that takes place through variations of quantities and not of prices. More strictly, Kaldor sees that process in terms of the ‘stock-adjustment principle’; in this regard, the fundamental notion in the analysis is that firms are guided by the desire to maintain a normal degree of utilisation of capacity as well as

" ... a certain normal output stock and a normal input stock. These norms are themselves related to the unit's sales and to its purchases, which in turn are determined by its own production." (*Ibid.*, pp. 32-3).

Under this perspective, the changes in demand that may occur reflect themselves initially in changes in the stocks maintained by firms; what happens next depends on the ‘transitory’ or ‘permanent’ nature of the changes in demand –on firms’ perception of those changes. Thus, if the change is merely transitory, production will rise transitorily so as to restore the normal levels of stocks; on the contrary, if the increase in sales is permanent,

“the increase in production will also be permanent, accompanied by a larger temporary increase until the desired relationship of stocks to sales is regained." (*Ibid.*, pp. 33).

Moreover, firms are to decide

“whether the increase in his sales is sufficiently large and lasting to call for an increase in his production capacity, either by hiring more workers, installing additional equipment, or both.” (*Ibid.*, pp. 25).

Indeed, Kaldor’s distinction between ‘transitory and ‘permanent’ changes of demand is of great relevance from the perspective of the analysis of ‘normal’ or ‘long period’ output. In itself, such a distinction entails a conception of the principle of effective demand in terms of the ‘normal’ conditions of demand. A similar argument is found in his analysis of “the irrelevance of equilibrium economics”, where he considers explicitly the role of expectations on the conditions of future demand (and of the changes in those conditions resulting from the present changes in sales) in the process of adjustment of supply to demand. According to Kaldor, in “the markets for commodities in which increasing returns are important, and which, for that reason, are only ‘imperfectly’ competitive --as is the case with manufactures--”,

“producers carry their *own* stocks and adjust the rate of their production in response to changes in their sales (or in the state of their ‘order book’) and there will be ‘induced investment’ in response to an *increase* in demand and the associated depletion of stocks.

Such induced investment will partly take the form of circulating capital ... and partly of fixed capital, in so far as the rise in current sales causes a revision of expectation of future sales." (Kaldor, 1972, as reprinted in Kaldor, 1978, p. 193; italics in the original).

This conception entails that firms, as part of their strategic (long period) policy, must maintain some degree of *planned excess capacity* in order to respond to possible changes in demand. This Kaldor considers explicitly in the context of his discussion, developed along the same lines as the previous one, on price formation on the basis of a 'mark-up' rule and on the subsequent adjustment of supply to the conditions of demand through the adjustment of stocks. In this regard, in an argument that is indeed very significant from the perspective of the analysis of effective demand in a long period setting, Kaldor states that the adjustment of supply to demand does not entail 'market clearing' in the conventional meaning of the term; it simply means that the changes in demand are reflected in –give rise to—effective changes in supply; this is so precisely in so far as the market works on the basis of the 'stock-adjustment principle' and, therefore, through the adjustment of supply to the conditions of demand; in this context, Kaldor argues

“In markets of this type, uncertainties concerning the future growth of demand mainly affect the degree of utilisation of capacity; it pays the manufacturers to maintain capacity in excess of demand and keep the growth of capacity in line with the growth of demand.” (Kaldor, 1986, as reprinted in Targetti and Thirlwall, 1989, p. 259).

This argument appears again in terms of the competitive strategy of firms in Kaldor's discussion of “the limitations of the General Theory”; in his own words,

“Under conditions of oligopolistic competition, producers deliberately aim at maintaining a larger capacity than they are likely to require –partly in order to be always in a position to satisfy 'new consumers', and thus to take advantage of any chance to increase their market share, but partly also in order to discourage the entry of new competitors.” (Kaldor, 1982, p. 6, footnote).

III. Concluding Remarks.

In this paper I have tried to provide a reconstruction of Kaldor's view of economic growth as demand-induced process, which is at the core of his account of the principle of cumulative causation. I first examine the hypothesis that the manufacturing sector is the 'engine of growth'. This hypothesis rests on the nature of 'capital' and labour, as resources used in production, and on the role of expansion of manufacturing in generating, mobilising and re-allocating them. If capital and labour were exogenously given, the circular and cumulative dynamics of manufacturing would not materialise and economic growth would be effectively resource-constrained as the 'conventional equilibrium theory' has it. But, in Kaldor's alternative view, the expansion of manufacturing entails "a *net addition* to the effective use of resources and *not just a transfer* of resources from use to another". A fundamental notion that results from Kaldor's

analysis is that economic growth is a path-dependent process that depends on the growth of demand. I next consider Kaldor's proposal to 'close' the system on the basis of the principle of effective demand. In this regard, I argue that Kaldor's view is unsatisfactory. When looked at from the perspective of the investment-saving process, he conceives the principle of effective demand as a purely short run, transitory phenomenon. In fact, his analysis comes close to Marx's view of crises, where these are seen as breaks in the normal process of reproduction of the system. I trace this view back to his own growth models of the fifties where equilibrium growth is seen effectively as a full-employment equilibrium. Finally, I argue that a consistent closure of the principle of cumulative causation requires to consider the principle of effective demand as a theory of normal output, i.e., to consider it --the investment-savings nexus-- in a long-period setting; this, in turn, requires to restore the central role of capital investment as the fundamental 'independent' variable in the process of generation of income and, as such, as the key, leading, factor in economic growth itself. In this regard, I bring to the fore some arguments from Kaldor's late writings, as well as from previous ones, which point precisely in this direction.

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