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# New Aspects of the Cycical Development of the Economy[1]

In my paper I will try to identify certain lessons which can be learned from Schumpeter's analysis of the cyclical development of the economy and which may help us to understand the novel aspects

displayed in our time by this fundamental process, whose characteristics alter from one "slice" of history to the other. In particular, I will try to indicate which elements can be derived from Schumpeter's microeconomic analysis and from Keynes' macroeconomic one to construct an integrated model of the cycical development of the economy in present-day conditions.

## *1. Relations between changes in economic structure and cycical development. The four industrial revolutions*

Since the beginning of modem industrial growth, that is,, for two centuries, we have had periods of just over half a century, each of which periods has been dominated by one, two, or at most three major innovations. With a metaphor to be used with the greatest prudence, Schumpeter defined these periods as long (or Kondratieff) cycles, after a Russian economist who had worked out this theory in the 'twenties.[2] Each of the periods is marked by "a fundamental transformation in the economic and social structure of society",[3] and constitutes a veritable industrial revolution. At the present time, Schumpeter's concept of the Kondratieff cycles is again being used in certain contemporary analysis of trends in industrial economies;[4] for this reason, too, it is essential to engage in a critical reflexion on the limits of the analytical validity of that concept.

The "industrial revolutions" of modem times are, then, four in number. The first is the English industrial revolution, which historians put as extending from the last decade of the seventeenth century to the fourth decade of the eighteenth. In that period, the growth process is dominated by the introduction and subsequent spread of the steam engine for fixed purposes in the textile industry (and particularity in the cotton industry) and in engineering, which was then mainly engaged in producing textile machinery, but gradually extended its range to weapons and warships. In that period, there appeared and gradually became a force on the social level, the modem factory, in an

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[1] Revised text of the paper read at the colloquium organized for the centenary of the birth of Joseph Alois Schumpeter by the Università Bocconi and the Catholic and State Universities of Milan on 20 and 21 October 1983 in Milan.

[2] Strictly speaking, the first economist to have spoken of long cycles was Vilfredo Pareto, in an article in the *Rivista italiana di sociologia* (September 1913 number); he takes up the subject again in the *Trattato di sociologia generale* in 1916, and then in an article in 1917. Cf. the article published by the author of this paper in the special issue of the review *Economie appliquée* on Schumpeter in 1950.

[3] The terms used by Schumpeter in *Business Cycles — A Theoretical Historical and Statistical Analysis of the Capitalist Process*, New York, McGraw Hill, 1939, p. 168.

[4] Sec for example: C. FREEMAN, J. CLARK, L. SOETE, *Unemployment and Technical Innovation —A Study of Long Waves and Economic Development*, London, F. Pinter, 1982

economy which till then had been essentially an agrarian, artisanal and manufacturing one (in the etymological sense of the word).

The second industrial revolution, which took place in the second half of last century, was dominated by the steam engine for mobile purposes: railways and steamers. The new means of transport opened up large regions for economic exploitation, such as those in North and South America, especially for agriculture and animal husbandry. During this period in England, there was a tendency for two major reservoirs of labour to dry up the old-style handicraft workers and surplus labour in agriculture, which facilitated the formation and strengthening of labour unions. The modem joint-stock company as well as the large credit and industrial units, made their appearance.

The third industrial revolution, which took place in the first half of the present century, witnessed the emergence of a large number of important innovations: electricity, the internal combustion engine and chemicals. Coal was joined by two new sources of power: electricity and oil. In this period, the growth of the large financial and industrial combines and of the trade unions went vigorously ahead, but the main transformation was the enormous expansion of public intervention in the economy, a development which was to be further expanded in the subsequent decades, both in the field of social expenditure and in that of education and scientific research, which was particularly important from the point of view of economic growth. It is widely held that we are now living in the fourth industrial revolution which is dominated by electronics, air transportation and atomic energy; indeed, it is argued that we have for some years been in the declining phase of the fourth Kondratieff cycle.

As I have observed, the idea of long cycles must be approached with great caution. It may prove to be not only analytically deceptive, but also dangerous for economic policy, since it may generate an almost fatalistic acceptance of the economic difficulties with which we are at present grappling. This idea can be useful only if it is used as a rational basis for grouping, and improving the description of, certain complex processes which take place in historical time. Some aspects of these processes recur because the impulses which generate them are themselves recurrent, and in the ultimate analysis they flow from major innovations. But recurrence and regularity are separate concepts. Regularity may be an optical illusion; and it is possible to identify other “long” cycles, of a different duration, as Schumpeter himself was inclined to admit. In any case, the idea is still valid that there are several industrial revolutions succeeding each other over time and characterizing different periods of the modem age.

## *2. Observable changes in the evolution of prices and wages*

The profound economic, social and institutional transformations which every industrial revolution involves have had important effects on the cycle and on its characteristics. Up to the first world war, the prevalence of relatively small productive units apparently made possible a relative regularity of the economic cycle — for a duration of 7-8-9 years, which is generally recognized as such, and which Schumpeter calls Juglar cycles.[5] It seems that the considerable multiplicity in all branches of small productive units and the relatively limited public intervention make it possible for the law of large numbers to operate dynamically if such a mathematical metaphor is permissible. After the first world war, the seismographs, so to speak, ran wild, especially in the years of the great depression. The hypothesis of the long cycle, which Schumpeter introduces to explain the gravity of the two great depressions in the last century and the great depression in the ‘thirties, cannot explain the in many respects untypical path of economy activity in the interwar period. After the second world war, the role of the State becomes important for cyclical development, so that the alternations

[5] theAs readers will be aware, Schumpeter, for his wide-ranging empirical analysis, adopted a schema of three cycles: short or Kitchin cycles lasting 2-3 years, medium or Juglar ones of about 9 years, and long or Kondratieff ones lasting 50-60 years.

of prosperity and downturns becomes a process guided, and even at times determined, by public decision-making centres. At the market level, the main changes are in the evolution of industrial prices and wages, which in the past century fluctuated upwards and downwards — in fact prices fluctuated more downwards than upwards — whereas nowadays prices are almost rigid downwards, and wages are completely so. On the contrary, prices of raw materials are still flexible in both directions. These changes must be related to the transformations that have taken place in the markets structures, particularly in modem industry, as a consequence of the concentration of productive units in certain sectors and of the growing differentiation of products in others. The traditional type of competition, which is characterized by a substantial multiplicity of suppliers and by homogeneous products, has been replaced by competition between a few suppliers, or by competition with a marked differentiation of products. The firms' increasing market power over the prices of products was accompanied by an increasing market power of the trade unions over wages. Indeed, at certain periods the latter tended to prevail over the former, which is to some extent limited by foreign competition. In our own day, money wages are increasing — usually more than prices — but are not falling: in the case of money wages, fluctuations are in the rates of increase and not in wage levels. There are, on the contrary, fluctuations in the absolute levels of the prices of raw materials; and the fluctuations are much more marked than in the absolute levels of industrial prices. This is because, in raw material markets, the prevailing conditions are not so different from competition, while, in the industrial products markets, the prevailing conditions are those of oligopoly and imperfect competition. Now, as I have tried to show in other works, in the former type of market, short-term price variations depend on supply and demand, while in industrial product markets, it is the changes in costs, and especially in direct costs, which regulate changes in prices. In these markets, changes in demand involve changes in the level of activity and not in that of prices. Hence, if industrial prices fail, it is not because of a drop in demand, but because direct costs have fallen. In the present age, this happened on a striking scale during the great crash (l929-32),[6] and to a limited extent on several occasions in the postwar period. There is rarely a downturn in industrial prices, since, even when raw material prices fail, money wages usually go on rising. Only when the algebraic sum is negative — and that is, in fact, rarely the case — do industrial prices fail.

In this sense, it can be affirmed that industrial prices have become relatively rigid downwards. These prices grow when direct costs go up; they may also grow when demand increases, but only in exceptional circumstances, ie., during a general boom at the international level, when the unused capacity shrinks in the main industrial countries.

Schumpeter does not consider in his theoretical model either the State or the trade unions, which Keynes on the contrary does, although only in a stylized and circumscribed way. Keynes, however, does not consider either the changes in productivity or innovations, which Schumpeter places at the heart of his analysis. As to market forms, Schumpeter is well aware of the spread of the large units of production, so much so that he puts forward the distinction between "competitive" and "trustified capitalism" to indicate the new economic system which, in his view, is tending to emerge from the concentration of the units of production; however, he feels that the new market structures have not yet succeeded in dominating the scene and in modifying in depth the mechanisms of reaction of the economic system.[7] Hence, he reasons as if the traditional type of

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[6] From 1929 to 1932, prices of raw materials fell by 50% and those of industrial products by about 20%, that is, as much as might be expected considering that the cost of raw materials represents about the half of direct total cost in industry. Hence, the fail in demand, which nevertheless was very heavy, affected the level of industry's activity and not industrial prices.

[7] *Business Cycles*, p. 96. Schumpeter gives great prominence to the process of concentration, but assigns scant importance in the process of differentiation between products, which is probabiy even more important than the former factor because of the effects it has had on the mechanisms of the formation of, and changes in, prices.

I remember that, as early as 1909, PANTALEONI had fully discussed the important role that, in the evolution of modem economies, had been assumed by large units of production. "Alcune

competition continued to operate fully in our days as well. Paradoxically, Keynes' position is the inverse one. He assumes competition, but at bottom reasons as if the formation of, and changes in, prices took place in non-competitive markets — for Keynes, at least as long as there is widespread unemployment, changes in demand determine changes in the level of activity and of in prices.

The mechanisms for the formation of and changes in prices and wages are not therefore unchangeable in time, and the economist should elaborate different theoretical models for the different "slices" of history; this holds good for all economic phenomena, but is particularly true for those characterizing the cyclical movement.

### *3. Three categories of models of the business cycle. The Schumpeter model*

Thus, on the assumptions at the basis of the various models of the business cycle, the historical conditioning factors must be identified. This is not difficult, either in the case of the Schumpeter model or of the models derived from Keynes, as has already emerged from the above remarks and as will emerge more clearly from the brief comparison which I am about to make.

It must first of all be observed that the Schumpeter model does not concern the cycle as such, but cyclical development, since, in principle, he does not regard the two phenomena as separable. For Schumpeter, the cycle is the "form economic development takes in the era capitalism".[8] The Keynesian models, on the contrary, concern the cycle as such.

In elaborating his model of cycical development, Schumpeter refers especially to the evolution observable in the more developed economies in the last century and at the beginning of the present one. This is obviously true for his first work — the *Theory of Economic Development*; but it is substantially true for the 1939 treatise n *Business Cycles* as well. In the Schumpeter model, it is innovation which provides the first impulse to the process of cyclical development. This impulse is translated into growing total expenditure on investment, fuelled by the creation of bank money, since the firms that carry out the innovations are followed by a host of imitators. The growing demand for means of production is gradually translated into a growing demand for consumer goods; the prices of all goods therefore rise, and even the firms not adopting innovations earn increasing profits even at unchanged prices, since they succeed in cutting their costs. The expansion gradually spreads and intensifies, until the innovating firms and the other ones (those which imitate the former and those which have expanded without significant changes in their methods of production) unload on the market the increased output and repay their bank loans. This double pressure — from the increase of supply and the reduction of monetary funds — forces prices down, and this in turn leads to the bankruptcy of quite a few firms which have not managed to cut their costs. Even the price system is altered as a result of the highly differential reductions in costs:

> …that sequence of phenomena leads up to a new neighborhood of equilibrium, in which enterprise will start again. This new neighborhood of equilibrium is characterized, as compared in the one that preceded it, by a "greater" social product of a different pattern, new production functions, equal sum total of money incomes, a minimum (strictly zero) rate of interest, zero profits, zero loans, a different system of prices and a !lower !level of prices, the fundamental expression of the fact that all the lasting achievements of the particular spurt of innovation have been handed in consumers in the shape of increased real incomes (Business Cycles, p. 137).

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osservazioni sui sindacati e sulle leghe", *Scritti vari di economia*, Voi. TI, R. Sandron, Milano 1909, reprinted in *Erotemi di economia*, Laterza, Bari, 1925.

[8] *Theorie der wirtschaftlichen Entwicklung*, Berlin, Duncker und Humbolt, 1911. English transition: Theory al Economic Development, Cambridge Mass., Harvard University Press, 1934.

### *4. The post Keynesian models*

The post Keynesian models of the cycle appear so different from the Schumpeter model that, at first glance, they show no affinity at all. For Schumpeter, changes in technology play the main part; immediately after come prices with an important role. In the post Keynesian models, technology is taken as given and prices are assumed to be constant. The whole cyclical movement is analyzed with exclusive reference to large aggregates, especially income, investment and consumption. For the Schumpeter analysis, it is still possible to apply the definition of economics current at the beginning of the century as the science of prices; with Keynes, on the contrary, economics becomes the science of income, or, in more general terms, of large aggregates. Nevertheless, despite appearances, there are nexuses linking the Schumpeter model and the post Keynesian ones. Indeed, it is possible to construct integrated models using materials taken from both Schumpeter and Keynes.

Hence, in the modes based on Keynes, the initial impulse is given by autonomous investments, thus called in order to distinguish them from induced ones, which are those which can be ascribed to. innovations or to decisions by public centres. An autonomous investment leads to an increase in consumption, and thus of income through the multiplier. The increase in income causes additional investment through the accelerator, and so on in an upward spiral. Up to a certain point, the movement tends to be reinforced, but is then interrupted when the full utilization of capacity is approached, since, at that point, the increase in income tends to weaken and this downturn through the multiplier from being relative becomes absolute; income falls. Hence, in the post Keynesian models, the whole process is explained by the interaction between the multiplier and the accelerator. From a certain angle, this interaction gives rise to the cycle. In another perspective, it gives rise to growth.[9] It cannot generate both simultaneously except by introducing external impulses.[10]

The point of departure is therefore analogous in the Schumpeter model and in those derived from Keynes. In the latter, expansion takes place through the process of interaction to which we have referred, a process adumbrated, even if not examined methodically in the Schumpeter model, in which a much more important role is assigned to the (unequal) increase in prices. And it is here, in the analysis of prices, that one of the fundamental differences between the two categories of models is to be found: in the post Keynesian ones, there is no price analysis, and as a rule prices are assumed to be constant, as are wages. These assumptions, that are to be regarded with reference to the new conditions emerging from the transformations in the product and labour markets, constitute the basis of the analytical model set out in Keynes' General Theory. Keynes, however, has the defect of reasoning as if the economy was composed solely of industry, and hence as if all prices varied in accordance with the mechanism peculiar to industrial markets. What is more, he refers to a closed economy. As a result of all this, Keynes completely ignores the raw material markets and regards prices as depending solely on wages. In his analysis, wages and prices remain constant until there is widespread unemployment. Both wages and prices increase when the system nears full employment of plant and labour as a result of the principle of decreasing returns of which Keynes had a rather peculiar conception. For Keynes, then, prices are rigid downwards, as long as wages are stable. Until there is widespread unemployment, there cannot be inflation.

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[9] L.L. PASINETTI, "Cyclical Fluctuations and Economic Growth", essay published originally in Italian in 1950 and later in the volume *Growth and Income Distribution - Essays in Economic Growth*, Cambridge University Press, 1974. Readers should be warned that post Keynesian models based on the interaction between multiplier and accelerator were to be followed by other models, also derived from Keynes, such as those elaborated by Kaldor. However, the models of the two waves have various points in common, and since, for the argument developed above, the models in the first wave are specially important, I will confine myself in examining them.

[10] Cf. the author's *Lezioni di economia*: Voi. I, Macroeconomia, Roma, Edizioni dell'Ateneo, 1979, pp. 178-84.

In the last few years, there has on the contrary been marked inflation co-existing with unemployment which is not only high but increasing — a situation which has contributed to determine the crisis in Keynesian theory.[11]

In the 'fifthies and 'sixties, however, unemployment fluctuated around relatively 10w levels in all the industrial countries, but inflationary pressure was low, if not indeed absent. The economy expanded, and the State regulated aggregate demand through fiscal policy, and, to a lesser degree, through monetary policy n such a way as to stimulate growth and attenuate the violence of the cycles. Growth proceeded vigorously, and the cyclical movement assumed a new form, especially because downturns consisted, not in absolute falls in income, but in falls in its rate of increase. In these circumstances, there was no reason to reject Keynes' theories, and indeed his prestige was rising. The development of these theories included the analysis of automatic stabilizers, which seemed to work admirably in economic policy. These developments, too, were based on the proposition — rarely expressed explicitly — that changes in demand affect the level of activity and not prices. This proposition, however, remains true. In recent years, one can observe wage increases which seem paradoxical, given the high level of unemployment; and substantial increases in raw material prices can be observed, which are inexplicable in terms of Keynes' theory. The increases in these prices, like the increases in wages, tend to spread through the whole price system, thus generating a vigorous inflationary pressure.

### *5. The State and the trade unions. The industries which lead cycical development and the industries propelled*

Keynes' analytical approach makes it possible to take account, although in a stylized and circumscribed form, of the State, the trade unions, foreign demand and imports. For example, Keynes takes account of the trade unions when he assumes that wages are relatively rigid downwards. He takes account of the State when he considers the consequences on effective demand of deficit public spending. Keynes, as we recalled, hypothesizes a closed economy, and hence he does not consider either the effects of exports or those of imports. However, it is easy to consider these effects in the framework of the Keynesian theoretical construction, as in fact has been the case. Exports can be treated as an addition to effective demand, and imports as a substraction from that demand. Naturally, only certain general effects of the factors now indicated are dealt with; but even this is a merit which the Schumpeter model does not possess. However, the latter model does have the advantage of taking account of innovations, changes in productivity and in the price levels and system; in particular, this model can suggest an important distinction — that between industries which lead cyclical development and the propelled ones.

We must make the attempt to combine the advantages of the analyses — macro and micro — in order to construct an integrated model. But to do so, considerable modifications are essential. The modifications and adjustments bear on three fundamental questions — market forms, income distribution and variations in productivity.

As to the market structures, we have seen that both the Schumpeter model and the post Keynesian ones are unsatisfactory, though for different reasons. It is important to distinguish between at least two sectors, and, correspondingly, between two categories of prices: those of industrial products and those of agricultural and mineral raw materials. The link between prices and direct costs should be sought solely in industrial prices, not in those of raw materials, where the link, which is characteristic of competition, is with demand and supply.

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[11] On the crisis of the Keynesian theory there is now an extensive literature. Here I need only mention J. HICKS, *The Crisis in Keynesian Economics*, Oxford, Basil Blackwell, 1974; and by various authors: Attualità di Keynes, edited by F. Vicarelli, Bari, Laterza, 1983; and, also by various authors: Keynes, edited by T. Cozzi, Cassa di Risparmio di Torino, 1983.

Changes in prices are not proportionate to those in wages because of changes in productivity, nor are they proportionate among themselves, both because of the effects of innovations, as Schumpeter brings out, and because of the difference in the mechanisms which regulate the variations in the different categories of prices. Hence, changes in prices of necessity lead to variations in distributive shares, and hence also in the share of profits, which influences investment decisions and in this way cyclical development. The increase in labour productivity is one of the main effects of innovations, even if this increase, though a very frequent effect, is not a necessary one, and even if, strictly speaking, it is possible to speak of an increase in labour productivity only in the case of innovations regarding productive processes and not in the case of innovations which give rise to goods not hitherto produced.[12] However, an increase in productivity is so important for cyclical development that it deserves a special analysis.

Schumpeter tends to assign the main importance to innovations which can be defined as autonomous as opposed to those which are stimulated by an expansion of demand, or by changes in the relative prices of means of production which include changes in the relative cost of labour (ratio of wages to prices of machines making it possible to save labour as its price goes up).[13] If we observe changes in productivity over time, we note it increases almost uninterruptedly, although not at a constant rate. This means that small induced innovations, in the sense just defined — ie. induced by the enlargement of the market and by the increase in the relative cost of labour — have, in the aggregate, a key role. To put the point more clearly, in any historical period, major innovations create the first impulses and the preconditions for growth, but, once launched, growth is mainly fuelled by the flow of small innovations.

If we recognize that the enlargement of the market, that is, the increase in total demand, has an important role in stimulating the flow of small innovations, another nexus can be established between the Schumpeter analysis and the Keynesian one, a nexus that may appear surprising, if it is remembered that Schumpeter was decidedly opposed to any analytic use of the Keynesian aggregates. The consideration of aggregate demand should of course be accompanied by that of demand disaggregated by sector. In its turn, however, the velocity of increase of sectoral demand will tend to be the higher, the more rapid the increase in aggregated demand, even if, in this case as always in the economy, there is a feedback effect. From the analytical point of view, however, we must, on the one hand, study the conditions of the growth of aggregate demand and, on the other, the reasons for the differential growth of demand in the various consumer goods, a question which must be examined bearing fully in mind the fact that needs are profoundly affected by social and international factors. The distinction between propulsive and propelled industries is wider than Schumpeter's distinction between industries which do carry out and those which do not carry out innovations, but can be deduced from that distinction if propulsive industries are made to include those stimulated by a particularly rapid expansion of demand. An increase in the relative cost of labour can also, within certain limits, stimulate the growth of certain industries, and here too we must admit the possibility of a feedback mechanism.

## *6. Integrated models. The application to the Italian economy*

The factors just mentioned are those of a macroeconomic Keynesian analysis and of a microeconomic analysis along Schumpeter lines, both being useful for the construction of a model which I make a point of calling an integrated one. Such models are anything but rare. In most cases,

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[12] It must, however, be borne in mind that really new products in any period — say, in any year — are very few and that, at the aggregate level, innovations which give rise to new products usually lead in an increase in total production which is greater than the increase in employment. The result is therefore increases in labour productivity.

[13] Schumpeter distinguishes between autonomous and induced innovations, but in a different sense from that indicated in the text. For him, induced innovations are those additional technical improvements which flow from the process of the imitation and adaptation of the main innovations (*Business Cycles*, p. 101, note 2).

econometric models belong to this category. Usually, however, the other models of this type justify the individual relations one by one often appealing to common sense rather than to theories. Rarely are these models based on a systematic theoretical elaboration. Many years ago (in 1967), I was led to put forward an integrated model capable of empirical verification. I was based on my earlier works of an abstract nature. I was prompted to construct this model by, as it happened, an essentially theoretical and not specifically econometric interest. However, while, at a subsequent date, it was used and developed on the econometric level, I was disappointed to see that the theoretical bases of my model did not give rise to a critical debate.[14]

In that model I tried to insert some of the themes touched on above, translating them into variables and equations. I have recently modified the model (always with reference to the Italian economy). Among other things, I transformed labour productivity in industry into an endogenous variable (it was formerly one of the exogenous ones).However, the analysis of concrete economic cycles cannot be carried out solely on the basis of a theoretical model: to avoid superficial interpretations such an analysis must be preceded — and this is another important lesson of Schumpeter — by a study of the long-term trends of the economy as a whole and by a detailed examination of the individual industries, with a view to identifying those industries which, m any period, lead to cyclical development. Moreover, it is not enough to consider the general relations as they come out of the theoretical model; it is necessary to make a thorough examination of the particular concrete circumstances affecting the different variables.

Lastly, we must study concrete economic cycles, separating the expansionary and contractionary phases, and singling out, for each phase, the most important impulses both with a positive and a negative sign, generated by the mechanism of cyclical development itself or by those coming from outside, so to speak, that is, the government and the monetary authority, as well as by foreign influences. That is, we have to isolate three categories of impulses, whether positive or negative: microeconomic ones, macroeconomic ones of a private nature, and macroeconomic ones of a public nature.

I have considered almost the whole postwar period from 1952 (that is, after the completion of reconstruction) up to the present time. In this period the following cycles may be recognized — using, to divide them, the relative troughs: 1) from 1951 to 1958,2) from 1958 to 1964, 3) from 1964 to 1971, 4) from 1971 to 1975. After 1975, the cyclical movement becomes extremely irregular. There is, it appears, a cycle of only two years (from 1975 to 1977). There is a recovery from 1977 to 1980. From 1980 to the present day, there is a period of inflationary stagnation of a duration never experienced since the end of the second world war. In the first of the three cycles, the propulsive industries are those producing cars, chemicals and resins; it is not so easy to identify the propulsive industries in the following cycles.[15]

However, I do not propose to go deeper into this analysis here. I shall confine myself to presenting some observations on the main propulsive industry in the first of the three cycles, the car industry, and to furnish certain indications about the impulses affecting these three cycles and the behaviour of relative prices and relative wages.

If we refer to a graph on a semilogarithmic scale of car production from 1952 to the present time, we obtain a fairly regular curve, corresponding to the second hall of a logistic one. This means that the velocity of growth tends to fail systematically, even if there are accelerations in years of

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[14] Only LUIGI PASINETTI, in a review in the December 1975 issue of the *Economic Journal*, put forward a few suggestions for a critical debate on the theoretical bases of the model.

[15] Among the factors that have contributed to stagflation I will mention only two: the variability of raw materials prices which has been enormously accentuated beginning with the crisis of the Bretton Woods monetary system, and the slowing down in the expansion of consumer durables, especially automobiles — a slowing down that, through the multiplier, contributes to bring about cyclical recessions. As for the recent cycles, I would mention that the recoveries 1976 and 1978-80 seem to have been launched by consumption (and exports) rather than by investment, and therefore present characteristics specific to "consumer prosperity" mainly due to public expenditure which Schumpeter discusses *à propos* of the Germany of the first postwar period. Cf. *Business Cycles*, pp. 718, 721 and 811. Cf. also T. COZZI's paper "Sviluppo e ciclo: l'eredità di Schumpeter", presented at the Milan colloquium of October, 1983.

cyclical expansion and decelerations or absolute falls in years of contraction. The car industry will illustrate the case of a propulsive industry which, in the postwar period, was mainly stimulated by an expansion of demand and not by autonomous innovations. The expansion of demand led to a flow of small innovations; other innovations were induced by the increase in the relative cost of labour and by the greater difficulties encountered by managers when they had to lay off workers who at a certain point were no longer needed. If we take a look at technical inventions and original innovations, Italy is one of the pioneering countries in the automobile industry. But the impetuous growth of this industry in Italy took place only when the per capita income of families in the middle earning bands grew beyond a certain critical threshold. In its turn, the average per capita income of all families also increased as a result, directly and indirectly, of the growth of the automobile industry.

And here are the main impulses for the first three postwar cycles in their expansionary (E) and contractionary (C) phase:

TABLE 1

| Cycle | Microeconomic impulses | | Macroeconomic impulses | | Public impulses | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | monetary | | fiscal | |
| | E | C | E | C | E | C | E | C |
| 1) 1952-1958 | Cars Chemicals Resins | — | — | Exports | — | | — | — |
| 2) 1958-1964 | Ditto (Wages) | Fall in Profits (Wages) | Exports | Foreign Deficit | — | Foreign Deficit | — | Foreign Deficit |
| 3) 1964-1971 | Chemicals Resins Cars | Ditto (Building) | Exports | Exports | — | — | — | — |

There are at least three features common to the cycles: 1) in the year of the deepest trough, the rate of change in industrial production comes dose to zero, but is still positive; 2) the main propulsive industries are the same — cars, chemicals and resins, even if in the third cycle they are in a different order. The differences are that in the first cycle the main negative impulse comes from abroad (sharp fall in the rate of increase in foreign demand); in the second, the origins are mainly domestic (as appears from the fact that, in 1963-4, industrial production in the other countries continued to grow at a sustained rate), while in the third cycle the origins were both domestic and foreign. In the second cycle the foreign deficit appears thrice among the negative stmuli, since this deficit is by itself a factor making for a reduction in what is called liquidity and, thereby, of loanable funds. This automatic effect may be reinforced (as in fact happened between 1963 and 1964) by restrictive measures on the part of the central bank and of the government (new taxes), taken precisely to get .foreign accounts back into equilibrium. The credit squeeze has a direct influence on investment and an indirect one on consumption, while for the credit squeeze the opposite is the case. The double restriction affects imports of both categories of goods. Both in the second and in the third cycle an important negative impulse carne from a fail in profits, which in turn was caused by a rapid increase in the wage rate (and from reductions in the hours worked). Total wages, however, especially in 1962 and 1963, had constituted a positive impulse.

It appears clear that, in the area of macroeconomic impulses, it is Keynes who offers the greatest assistance, while in that of microeconomic ones Schumpeter is of more help. Of course we must, in a systematic analysis, after having identified the industries which lead each cycle, by the criterion of the relative speed of growth in the expansionary phase, make a methodical examination of the main economic variables relating to these industries, among which mention should be made of production, employment, productivity and relative prices and wages. Schumpeter's analysis

convinces us that these magnitudes have shown greater dynamism in the propulsive industries than in the other ones, in the sense that the first three magnitudes presumably tend to grow more than in the other industries in the expansionary phase, while the opposite does not normally hold good in a phase of contraction. Indeed, in the first approximation Schumpeterian model, the increase in production in the industries innovating should actually become more rapid in the negative phase for the economy taken as a whole — a hypothesis, however, which rarely corresponds to the facts, probably because of the indirect negative effects of aggregate demand which Schumpeter tends to neglect.

As to prices and wages, the Schumpeterian analysis leads us to conclude that, in the more dynamic industries, because of the more rapid increase in productivity, relative prices will fail, or relative wages will increase, or both effects will be felt. These changes can take place with a decreasing or increasing average price level — if we disregard the limiting case of a constant price level. In the past century, the first pattern was the more frequent one (and it is the one that Schumpeter has in mind), but, in our own time, it is the second one. However that may be, prices and wages tend to vary in the sense indicated above — there is a fail in relative prices or an increase in relative wages, or a combination of the two effects, where the relative price is the ratio of specific price to the average price level and the relative wage is the ratio of the specific wage to the average wage level in industry. The fail in relative prices or the increase in relative wages in the more dynamic industries does not at all exclude the possibility that profits may also grow in these industries; indeed, if productivity increases at a high rate, usually all three effects are produced.

Here are the data for the three most dynamic industries in the three cycles considered:

TABLE 2

| Cycle | Cars | | Chemicals | | Resins and plastics | |
|---|---|---|---|---|---|---|
| | Relative prices | Relative wages | Relative prices | Relative wages | Relative prices | Relative wages |
| 1) 1952-1958 | 96.7 | 102.5 | 91.4 | 112.4 | 80.8 | 112.4 |
| 2) 1958-1964 | 87.5 | 100.7 | 84.5 | 113.7 | 52.5 | 113.7 |
| 3) 1964-1971 | 82.5 | 103.4 | 75.8 | 125.0 | 37.9 | 135.0 |

The question of changes in relative prices and wages is of interest not only for the interpretation of cyclical development; it is also important for economic policy.

### *7. A concluding thought*

There is thus much to be gained by combining certain elements of the Keynesian analysis of effective demand and certain parts of the Schumpeter analysis of technical progress and of the growth of the economy. If we reread the violently critical review of the General Theory written by Schumpeter just after the publication of that book,[16] and we reconsider the reasons for Schumpeter's rejection of aggregate analysis in the Business Cycles,[17] a thesis such as the one put forward here may seem surprising. However, after the second world war, Schumpeter had

[16] *Journal of the American Statistical Association*, December 1936, Vol. 31, No. 136.
[17] *Business Cycles*, pp. 43-4 and 144.

substantially attenuated his criticisms.[18] In any case, it is not the first time that the integration of apparently irreconcilable positions proves not only possible but fruitful.

*Roma*

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[18] In the advanced economic theory class which I followed in 1949 when I was at Harvard as a researcher, Schumpeter devoted two lectures to models derived from Keynes and based on interaction between the multiplier and the accelerator. He illustrated them in a detached but not hostile manner, and indeed showed that he regarded them as analytically useful, although only in a secondary way, for the explanation of short (Kitchin) cycles, as METZLER had proposed ("The Nature and Stability of Inventory Cycles", *Review of Economic Statistics*, August 1941).