Underdevelopment

A Strategy for Reform

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1

Economic development in a secular perspective

The long preparation

Economic development has become a systematic process only in the last 500 years; it has become systematic and vigorous only in the last 200 years, with the development of modern industry.

The development process started in certain European countries and only later in other continents. Previously expansions of production were occurring irregularly and in limited areas, sometimes linked to migrations or wars. Technological and organizational innovations took place very irregularly. Organizational innovations took the form of new systems of legal rules applying to the behaviour of the members of a given society in their life and in their economic activities. Greece excelled in the creation of new systems of thought, that subsequently became the matrixes of modern science. Rome excelled in the creation of new rules of behaviour and new institutions, that proved to be so vital that, even after the extraordinary changes that have occurred in social and economic life in the course of centuries, they still survive to a non-negligible extent in contemporary societies – property laws, credit and debt relations, the system of contracts, laws about commerce and the organization of productive units, for example.

Technological changes applied to production became less and less rare in the last 400–500 years, hand in hand with the

development of experimental science. Indeed, the relations between science and economic activity began to become systematic, starting with the epoch of the great geographic discoveries. 'The discovery of the Western Hemisphere represents the most solemn deed with which science has invaded the public economy' (Cattaneo, 1956), a discovery, we may add, that was prepared by a kind of cooperation between Christopher Columbus and Paolo Toscanelli, a fascinating thinker – great mathematician, great astronomer, great geographer: in fact, the discovery of America was, first of all, an extraordinary scientific discovery. Adam Smith put forth, and forcefully so, a similar view.

The date of the discovery of America has thus been proposed as the beginning of the modern epoch that is characterized by the rapid development of towns, as both Smith and Cattaneo have emphasized (Smith, 1961, book III, chs. III and IV; Cattaneo, 1956). In particular, they conceive the development of towns – that is, of the bourgeoisie – and that of modern scientific thought as one and the same thing.

Modern capitalism is the outcome of such developments. However, many economists speak of 'capitalism' as if it were a social system relatively stable in the course of time and relatively similar in the different countries of the world. This is not so. There is not much in common between the commercial capitalism prevailing in several European countries and in certain Asian countries in the fifteenth, sixteenth and seventeenth centuries and modern industrial capitalism. The market itself, that has been seen as the main characteristic of capitalism, is not the same, in space or time, since it does not work in a vacuum, but in a complex institutional framework that evolves over the course of time.

Three stages in the evolution of modern capitalism

During the epoch of commercial capitalism certain institutional and organizational innovations had a key role: in the

commerce with colonies and in banking, the introduction of joint-stock companies with limited liability was critical; in agriculture, new types of property rights and new contracts capable of stimulating production were vitally important. During commercial capitalism technological innovations were rare; they became frequent and important during modern industrial capitalism, whose evolution took place through different stages.

The first stage is the one analysed by Adam Smith and covers the seventeenth and a good part of the eighteenth century. During this period we observe an acceleration in organizational changes in agriculture: the remnants of the feudal system were gradually eliminated, the communal forms of production were reduced to the minimum and those based on private property became dominant. During this period, in which handicraft intertwines with agriculture, industry started its development as manufacturing, to be intended in its ethimological sense (handmade). Both in agriculture and in manufacturing, innovations in the methods of production were more and more frequent, but the factory system and modern machinery were still to come.

Towards the end of the eighteenth and the beginning of the nineteenth century the Industrial Revolution took place in England and the factory system and competitive conditions gradually asserted themselves in the majority of industrial markets. This is the second stage of capitalism, the stage that we call 'competitive', in the sense that, medieval privileges and institutional obstacles having been largely eliminated, the entry into different markets became relatively easy, productive units were relatively small and products were homogeneous. During this period several important changes took place: the most important was the development of a sector producing plant and machinery, which is what we now call the 'investment sector' – in the eighteenth century a limited number of units, hardly forming a sector, were producing 'machines' of the premodern type. When the investment

sector became socially relevant, in England after the Napoleonic Wars, economic growth became a cyclical process, propelled mainly by that sector (compare Marx, 1977, 3, pp. 592–3). As appears from Schumpeter's monumental treatise on business cycles (1939), the growth of industrial economies emerged as a cyclical process in the sense that it was characterized, up to the First World War, by relatively regular fluctuations, lasting from seven to nine years – a striking regularity, considering the multitude of forces, economic and non-economic, impinging on the economy. After the First World War, beginning with 1929, the Great Depression took place, an economic earthquake that had its epicentre in the United States and was at the roots of extraordinary political events. Between the two world wars economic fluctuations became very irregular, also due to the increasing relevance of public interventions, and it is not easy to detect cycles. After the Second World War growth re-emerges as a cyclical process, but with new features and much less regularity as compared with the period preceding the First World War.

Since the investment sector is where machines are produced and since as a rule technological change is embodied in machines whose most recent models are also the most efficient ones, that sector became the principal source of technological change for the whole economy in the area of process innovations – different considerations apply to product innovations. Correspondingly, the machine makers were and still are the most important innovators in this area. At the same time, with the development of experimental science the inventions of professional scientists have become more and more frequent and their application to productive activities less and less rare.

During the competitive stage of capitalism, covering almost the whole of the nineteenth century, prices fluctuated, but their basic trend was decidedly downward until 1896 or 1897. Money and real wages also fluctuated: their trend was

rising very slowly during the first half of the century, then rapidly. Labour productivity was increasing more than money wages, thus determining a decline in the cost of labour per unit of output and a decline in the trend of prices, in concordance with the views of Adam Smith.

Both the trend of wages and that of prices changed in what I call the stage of 'oligopolistic capitalism', starting towards the end of the nineteenth century and lasting, apparently, until the 1970s–1980s. This stage is characterized by an increasing concentration of firms and an increasing differentiation of products. In the stage of oligopolistic capitalism, apart from the abnormal period of the Great Depression, both money wages and prices were rising, the former more than the latter, the gap being attributable to the increase in labour productivity.

Whereas the process of concentration implies, in each sector, a decline in the number of firms, some of which became larger and larger, the process of differentiation has been accompanied by a systematic increase in the number of firms. But this did not necessarily imply increasing competition in the traditional sense. In fact, product differentiation and quality competition in many industries were partly replacing price competition, also due to the development of advertising made possible by the extraordinary expansion of the so-called 'mass media', like the modern newspaper, radio and, more recently, television, all created or strongly stimulated by major technological innovations.

The process of concentration itself is the effect of technological change and of what might be called 'dynamic economies of scale', since certain innovations necessarily imply an increase in the size of output. Such a process has been characterized by the reappearance, in new forms, of the joint-stock company, then – at the end of the nineteenth century, after a great merger movement – by trusts and cartels and, finally, by the giant multinational corporations. Among the propelling forces of this process we must include not only

technological economies of scale, but also organizational, commercial and financial economies of scale.

Hand in hand with this process of concentration, a strengthening of trade unions has taken place, partly stimulated by that very process. In fact, trade unions are stronger in large firms, and they enjoy a certain market power over wages mainly as a result of market power over prices by firms. The whole process, which is at the roots of the changes in the trends of wages and prices (see chapter 3 below), was influenced, as regards the trade unions, also by political action and linked with the increasing influence of left-wing movements in the industrialized countries, particularly in Europe. The strengthening of the trade unions has caused an increasing downward rigidity and an increasing upward flexibility of money wages.

On average, especially after the Second World War, money wages were no longer relatively stationary as in the nineteenth century (real wages were increasing, owing to the fall in prices); as a rule, money wages today increase at a rate equal to and even higher than the increase in productivity. As a result, prices are either stationary (but only at the wholesale level) or increasing. In these new conditions a more or less intense structural inflationary pressure has appeared.

During the third stage of capitalism, then, the behaviour of prices and money wages is characteristically different from that of the previous stage; the trend of prices was no longer downward, but clearly upward. The only important exception was the sharp fall of prices in the Great Depression, but, as I will point out in chapter 3 (p. 76), the exception is explained by the different behaviour of the prices of raw materials and those of finished products – my previous considerations apply to the latter category.

During the stage of oligopolistic capitalism competition still works and can be vigorous, but it works in ways different from those of competitive capitalism. The main novelty is that in competitive capitalism firms are relatively small

and produce homogeneous goods; in such conditions, firms cannot influence prices and workers cannot influence wages. Instead, in oligopolistic capitalism firms, to some extent, can influence prices and workers, mainly through trade unions, can influence wages. The fact is that the differentiation of needs and of jobs has been and is rapidly increasing owing to the increase of *per capita* income and the spread of product innovations.

In the third stage of the development of modern capitalism, and particularly after the Second World War, public expenditure and public intervention in research became more and more important for both military and civilian purposes. Public intervention in research also took the form of financial support of various kinds to the investment in laboratories of private firms and to universities. Let us remember that at least three of the most important inventions of our time – atomic energy, the numerically controlled machine tool and the laser – had their decisive breakthrough in two universities (Chicago, 1941, and the Massachusetts Institute of Technology, 1951 and 1965). The transistor, which is at the basis of the development of the electronic computer, was invented in 1951 in the laboratories of the Bell Corporation, a private corporation that, like the above-mentioned universities, had obtained relevant financial funds through contracts with the American government.

The contraposition between the state and the market, that is valid in several cases, is meaningless in the area of research, where we find cooperation even in those countries that more than others tend to favour market forces.

The revival of small firms: a new stage

The leading innovations of our time find their propelling centre in information technology (IT) and the computer industry. To be sure, the technological and economic changes that we are experiencing have become so profound and so

rapid that they justify the hypothesis that we are entering a new stage, the fourth in my list. The best way to evaluate the importance of such changes is to look at the evolution in the structure of employment.

In highly industrialized countries employment in agriculture is reduced to a very small fraction of the total. Employment in industry is either stationary or declining, if only in relative terms, despite the fact that industry – and particularly manufacturing industry – remains the typical area of innovations which affect not only industry but the whole economy. Services, both private and public, have been expanding and employ the majority of the active population. As regards industry, a peculiar phenomenon is taking place in several countries – that is, a decrease in employment in large firms (with more than 1,000 employees) and an increase in employment in small firms, with total industrial employment declining or remaining more or less constant.

To explain these trends we have to recall the two types of division of labour described by Adam Smith. The first type – that is, the progressive specialization of productive operations among different firms – asserted itself during the Industrial Revolution and until, say, 1870; then for a long historical period – broadly speaking, from 1870 to 1970 – the former process was eclipsed by the second process, that leading to concentration, a process pushed by the division of labour occurring within firms, whose sizes increase. At present, however, the process of differentiation seems to have reappeared in new forms in many branches of industry, especially in those producing consumer goods. The new stage that Piore and Sabel (1984) defined as flexible specialization, and I (1981) called the stage of the revival of small firms, was opened up by certain innovations, such as microelectronics, which were largely the product of defence and space research. There are several economic reasons aiding such development:

- First, technological change is separating out many services formerly internal to industrial firms and therefore included, in both income and employment statistics, in the industrial sector; after the separation, such activities have been included among *services*. In this area we find certain segments of research activity, repair services and legal and technical services. Such a change, however, is not simply statistical or formal; it gives rise to an increasing number of highly specialized small firms which also become more and more important in terms of employment.
- Second, with increasing real incomes, an increasing number of consumers become interested not so much in price but in the *quality and design* of goods. This has provided new opportunities to small firms. In other words the differentiation of needs has been accompanied by that of goods, also due to innovations, and has given rise to a considerable market power both of firms and of workers, even independently of trade unions.
- Third, with rising real incomes, manual workers have shown an increasing resistance to accept repetitive and monotonous jobs, typically those required by the assembly line and other methods of mass production. As a consequence, industrialists have speeded up automation and, for certain operations, have introduced robots. But neither these decisions nor, in certain advanced countries, the immigration of workers from less developed countries has contained the increases in wages of repetitive jobs, while the import of the goods produced by the latter countries has increasd. All this, and especially the acceleration of automation, has helped to determine the decline in the employment of large firms. At the same time skilled workers are increasingly preferring to accept less repetitive and tedious jobs in *innovating small firms*.

- Finally, the *increasing pressure of trade unions*, which tends to be the more vigorous the larger the size of the firm, is a non-negligible factor for both the acceleration of automation and the decline in employment in large firms, and indirectly for the growth of small firms which, as we will see, has been powerfully favoured by the development of IT.

When small firms supply only or mainly a given large firm, they are satellites of such a firm; however, they become independent when they supply a variety of firms of different size and a number of individual consumers. On the other hand, small firms supplying large firms often obtain from such firms information or assistance to introduce technological innovations.

The new possibilities of growth opened up to small firms can have great importance for underdeveloped countries, whose markets, owing to low *per capita* incomes, are relatively limited: the fact that the relevance of the economies of scale is declining or that in several branches large size is no more a precondition for an efficient production is clearly an advantage for those countries.

In general, the revival of small firms does not imply that large firms lose their importance. As I said, their weight declines in terms of employment, not in terms of output, that in large firms continues to rise. A new merger movement has occurred and is now under way, with the emergence of giants of international relevance. In Europe, such a movement has been accelerated by the formation and the growth of the Common Market (see Sylos Labini, 1969 [1956], pp. 62–3) and is likely to receive a new impetus after the steps towards the unification of Europe, among which the creation of the Euro stands out. In certain industries the process of concentration, where static and dynamic scale economies have always been important, is giving rise to European and to

world giants. In some of these industries, such as automobiles, scale economies have been enhanced by automation and robotization. Both the trend towards the diminution of employment in large firms and that towards the expansion of the size of those firms in terms of output or of activity, are particularly pronounced in the area of banks and other financial organizations.

In brief, we have two processes, only apparently contradictory: a new process of concentration and a new process of differentiation, the former pushing down, the latter pulling up, the level of employment. The algebraic sum tends to be positive especially owing to the service sector.

Schooling and research in the different stages of modern capitalism

During the first stage of modern capitalism, characterized by organizational and institutional changes in agriculture and by the growth of the early manufacturing activities, the relations between economic development and education were largely indirect. Major innovations were exceptional and were due to individual thinkers – 'philosophers' Smith calls them – minor innovations to common workmen. Illiteracy was the rule and only a minority of children were enrolled in elementary schools – Smith was advocating, not primarily for economic reasons, public intervention to generalize elementary education. Universities had few courses – law, philosophy, mathematics, natural sciences, medicine; universities in Italy were the best in Europe. In England universities to some extent still preserved their original purposes, i.e. of institutions for the education of churchmen.

During the stage of competitive capitalism, opened up, in England, by the Industrial Revolution, relations between scientific research and economic development were becoming less and less occasional. The triad considered by Joseph

Schumpeter – the inventor, the modern banker and the modern entrepreneur – assumed the main role in the process of economic development. Mechanical industry – the core of the investment sector – received a strong impulse in England by the orders of the Navy during the Napoleonic wars. Elementary education became available for the majority of the population and universities gave an increasing space to experimental science.

In the stage of oligopolistic capitalism, which began towards the end of the nineteenth century, entrepreneurs started new firms by exploiting major innovations – in the production of steel, in heavy mechanical industry, in chemistry, electricity and motor cars. In this stage, the elementary education of the whole adult population was completed – only tiny minorities remained illiterate. Pure research was developed in the universities and, in certain countries, also in private foundations and in the laboratories of large firms. Especially after the end of the Second World War and especially in the United States, military orders and contracts gave a great impulse to the growth of research, with an important fallout for civilian production.

In what I consider a new stage of modern capitalism, in which large firms continue to grow in terms of output but not in terms of employment and in which we observe a revival of small firms, public policy intended to promote research has been developed. In certain countries, such as the United States and some European countries, special organisms are created to promote the diffusion of innovations for the benefit of small firms that are unable to organize laboratories. (In the United States these 'business incubators' are created thanks to the cooperation of firms, local authorities and universities.)

If we consider the whole educational system in advanced countries after the Second World War, we notice that the number of university students grows rapidly everywhere and that certain universities strengthen their role in pure

research, thus indirectly helping the development of applied research and of major innovations. At the same time, the role of the secondary and technical schools becomes essential for the speed of the diffusion of innovations. Here it is fitting to point out that the United Kingdom, that has some of the best universities in the world and an impressive number of Nobel prizes in experimental sciences, has not had a particularly brilliant performance as far as economic development is concerned: on the whole, after the Second World War, the increase of productivity has been either equal to or, more often, below the increase observable in several other European countries, in the United States and in Japan. In England the production of inventions and of innovations is good; less good is the process of diffusion of innovations. I think that this can be explained if we consider the record in the area of secondary and technical schools; this UK record is not particularly favourable, as appears from the data of table 31 of the 1998 UN *Human Development Report*.

The process of diffusion of innovations in a given country is, then, to be distinguished from the process of their production; this in its turn depends on the creation of inventions, that today as a rule takes place in public and private laboratories. However, a country can adopt the policy of imitating the innovations carried out by others – this was the policy adopted by Japan after the Second World War. But imitation necessarily implies adaptations and thus elements of innovation; when such elements become prevalent, we can speak of production of innovation rather than of imitation.

From the standpoint of both economic growth and civic development of a given country, the production of innovations is by far more important than the consumption of goods produced by innovating industries: it is not the availability that matters, but the productive capacity, which can grow in the course of time. From the standpoint of economic growth the production of innovations is important especially because it can offer, in international competition, a shelter or

a weapon much more efficient than that given by the consumption of new goods produced by other countries, even if these are investment goods. From the civic standpoint we have to consider that the production of innovations necessarily implies research activities that have widespread cultural fallouts and improvement in the quality of labour – I refer not only to the growth of research workers, but also to that of technicians and of highly skilled workers.

Technological innovations and institutional innovations

In the production and in the diffusion of innovations research and schooling have the key role. For good and bad, innovations represent the essence of modern civilization and, particularly, of economic development. We have to distinguish between technological and institutional innovations. By referring to 'epoch-making innovations' Schumpeter was considering three industrial revolutions. The first, the English Industrial Revolution, took place, in a purely indicative way, between 1770 and 1830 and received its main impulse from the steam engine applied to the textile industry and to the first mechanical industry. The second revolution, that occurred between 1830 and the end of the nineteenth century, was pushed by the application of the steam engine to the means of transportation on land (railways) and by sea (steamships). The third revolution – 1900–50 – was pushed by chemistry, electricity and the internal combustion engine, applied to automobiles and aeroplanes. We may add a fourth revolution, in which we live, pushed by new types of aeroplanes and, above all, by IT. It is fitting to emphasize that this extraordinary and multi-form innovation gives rise to remarkable savings in the time of production and of delivery, makes accessible to small firms the advantages of economies of scale previously restricted to large firms, modifies already existing goods and services and generates new goods

and services in a continual stream, with consequences that concern and sometime disturb the life of persons no less than economic activities.

These great technological innovations have been accompanied and, so to say, supported by institutional innovations, that are embodied in law. Here I will recall three such innovations: modern banking – the rise of the bank that creates money in the sense that it transforms the debts of firms into deposits that can be used as a means of payment – the stock exchange and the modern joint-stock company.

The bank that creates money asserted itself already in the first stage of modern capitalism and subsequently expanded rapidly, radically changing its features. The second innovation, the stock exchange, emerged towards the end of the seventeenth century, but had a strong expansion only in the second half of the nineteenth century, with the development of steamships and of railways, that required firms of large size. Hand in hand with the stock exchange the modern joint-stock company appeared and developed. At the origin of both innovations – stock exchange and joint-stock company – are activities that are in need of large and increasing financial means and therefore require rapid investment and disinvestment decisions.

Such developments have been accelerated and amplified by large mergers and then by the growth of multi-national companies. Such developments recently have been integrated by the appearance of new financial intermediaries.

Changes in institutions condition and are conditioned by the overall development of the economy, although the development of particular industries, such as railways, have played a special role in promoting certain institutional changes. In the case of certain industries that are important not only from the point of view of their size, but also because of the consequences that they can have on the whole of social life – such as electricity – the development of such industries is bound to be regulated by laws that occasionally have to be

modified. I tried some years ago to sketch the development of the British electrical industry through the laws that have accompanied it, sometimes by favouring it, at other times by restraining it (Sylos Labini, 1974).

The most important institutional changes, however, refer, not to a particular industry or a particular sector, but to the whole economy. It is a process of continuous change, that has to be seen in the framework of the whole cultural evolution, of which the institutional changes are only one aspect.