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The Theory of Unemployment, too, is Historically Conditioned*

SUMMARY: 1. *Preliminary observations; 2. Employment and unemployment: the analytically important subdivisions; 3. The causes of the recent increase in unemployment in developed countries; 4. Technological unemployment and the unceasing redistribution of workers during the growth process; 5. Industry: absolute and relative saving of labour; 6. Unemployment in industry: Ricardian, Keynesian and neoclassical unemployment; 7. Relation between wages and unemployment; 8. The flexibility of the labour market; 9. The reduction in working hours; 10. A reference model; 11. Concluding remarks.*

APPENDIX: 1. *The preliminary hypotheses: two graphs; 2. The estimated equations for the Italian economy; 3. A short-term reference model; 4. The slowdown i'z the process of growth; 5. The employment and oil consumption equations; 6. Employment and unemployment: the young; 7. Prospects for employment in Italy.*

1. Preliminary observations

1) The social reality which theoretical models seek to interpret changes over time. All models are historically conditioned, but some are more so than others; those which express little more than logical schemas are least of all so. The theory of unemployment ranks high in this kind of classification. In one way or another, all theoretical models of unemployment take account of this. But they do so only implicitly. If this concept is brought fully into the open, it would, I believe, facilitate theoretical analysis and make critical discussions of the various models more fruitful. For the weaknesses of these models, often and at least in part, do not lie in the field of logic, but in the degree of realism of the initial hypotheses, and this realism, even when it originally exists, does not remain constant over time.

2) In this study, I shall present the results of various econometric estimates which, on the basis of certain theoretical hypotheses, bring out some empirical regularities. It follows from the observations I have just made that these regularities are of a probabilistic nature and are historically conditioned, that is, they depend on structural data which in specific "slices" of history are relatively stable, but which change in the course of time, occasionally even in short time spans.

3) The economists of the neoclassical tradition reason in terms of interdependence, which is a static concept. The reasoning put forward in this paper is in terms of interaction, which is a dynamic one. This concept appears to be more useful analytically.

4) For almost fifteen years, unemployment has been on the increase in the most important European countries, and has gone over levels which, until not too many years ago, would have been absolutely unthinkable. And yet it does not seem as if this development is producing the socially and politically explosive effects which they were widely expected to provoke. To explain this state of affairs, there are a number of circumstances which must be examined. In the first place, in the postwar period there has been a marked increase in the average family income in all the countries now defined as "developed" (in Italy, the figure is over three times higher). In addition, there has been an increase in welfare assistance to the unemployed and to poor families, which has eased the

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strain on both categories. In the second place, the unemployed in Italy are not people without work, but are mostly engaged in precarious activities, have irregular earnings, or work in the black economy or at home. When questioned in the periodic inquiries on employment, these people describe themselves as unemployed, because they are looking for relatively stabile employment which can entitle them to insurance and other welfare benefits and offer prospects of betterment. Then there are part-time workers who, in certain countries such as the United States and Japan, are officially registered as employed, even if they work only for one or two hours a week. In other countries, part-time workers report themselves as being unemployed, even if they work for a slightly larger number of hours a week. Since nowadays part-time workers are increasing in every country, these uncertainties cast serious doubts on the international comparability of the data. Lastly, what is normally called "frictional unemployment", once estimated at between 15% and 3% depending on the country concerned, has now gone up sharply as the result of the sizeable rise in average family income noted above, which enables the younger members of the family to look for an attractive job, even if the search lasts for some time. For the same reason, and because of the extensive public interventions, there has been a rise in the average level of education, and someone with a degree or diploma is not disposed to accept a job as a porter in the wholesale markets. More generally speaking, the improvement in economic conditions and the spread of education in the developed countries have sharply reduced the number of people willing to carry out repetitive and unsatisfying work with the following consequences. There has been a steady decline in the ratio of salaries to wages, a robotization of certain productive processes, the increasing importation of products incorporating a high intensity of unspecialized labour, and immigration from the Third World. (In some countries, we can witness the paradoxical spectacle of simultaneous growth of immigration and unemployment.)

The above observations should not lead us to minimize the social gravity of unemployment for at least two reasons. For one thing, when business is slack, the first to lose their jobs are the Third World immigrants, which tends to create mounting social tension. And secondly, it particularly affects the young, who, when they fail to find a relatively stable job with prospects of improvement, lead a precarious life, and the vacuum thus created may be even more serious than the emptiness created by hunger in the stomach. Hence, it is entirely reasonable to take a very serious view of unemployment, both in analysis and in economic policy.

From the statistical point of view, if the data on the absolute levels of employed and unemployed are not very reliable, it may be assumed that changes in the two sets of figures are not misleading, since it seems improbable that the errors are such as to seriously affect the reliability of the rates of change in the course of time.[1],[2]

5) As a rule, economists assume that society is divided into two categories — wage earners and those receiving profits ("capitalists"),and regard wages and salaries as being on the same plane, by virtue of their economic and social nature. It is not possible to share either of these views. At the present time, wage-earners no longer constitute a majority in any of the industrialized countries (the figures range from 35% of the working population in the United States to 42% in Italy and England). Moreover, the logic governing changes in wages, which represent-direct cost items for firms, does not coincide with that for changes in salaries, which come under overhead costs. As for

[1] GIORGIO FUÀ (1976) distrusts not only the statistical data, but even the very concept of unemployment. Rightly, he regards the unemployed as persons who are not non-working, but irregularly employed, and does not in the slightest minimize the gravity of the problem. Fuà prefers to analyze the evolution of the rate of activity (the Italian figure seems to him to be abnormally low). For many analyses, Fuà's criterion is certainly the soundest. In the present paper, however, I concentrate on unemployment, since, for my purposes, it is essential in distinguish between the unemployed in the narrow sense (people who have lost their job) and people in search of employment — a distinction which disappears when we concentrate on the rate of activity.

[2] The Italian Central Statistical Institute (ISTAT) recently recalculated employment in terms, not of physical persons, but of "standard labour units". Among other things, this estimate seeks in take account of part-time workers. For certain purposes, data of this kind are preferable in the traditional ones. In any case, the rates of change in the two series of data normally coincide.

the salaries of civil servants, they follow a logic which is again different. And civil servants form a sizeable proportion of the working population (ranging from 14 to 22%). Lastly, we must not leave out of account self-employed workers, including professionals, who form from 16 to 30% of the total and who are on the increase in almost all industrialized countries.

2. Employment and unemployment: the analytically important subdivisions

Keynes' assumption of the relative homogeneity of employment was, strictly speaking, not even valid in his day. At the present time, with the spread of high-school and university education and with the growth of employment in the services sector, it is even less so. But neither does the opposite point of view, which stresses the segmentation and the fragmentation of the labour market, prove suitable, since it does not permit of useful generalizations. 'What is needed, then, is to identify the subdivisions which are analytically the most fruitful ones. The main subdivisions are probably two in number. The first applies to unemployment, and the second to employment. The unemployed are divided into three categories — unemployed formerly employed, young people in search of their first job and those looking for employment although they do not belong to the labour force (housewives, students, and pensioners). In various important respects, the three categories of unemployed call for different models of interpretation. As regards employment, it is first of all essential to distinguish between the four major sectors of the economy: agriculture, industry, private-sector services and the civil service. In a number of analyses, too, we must keep men separate from women, self-employed workers from dependent ones and, in the latter group, those who work in the large firms from those in small ones.

In the long run a systematic flight from the land is evident in the agriculture of all developed countries. In some countries, however, this exodus has stopped, or is about to stop. The long-run trend for agricultural employment is downwards. Agriculture provided the main reservoir of labour for industry. Today that reservoir is drying up. In business cycles, which on an average last 5 to 6 years, the rate of change in agricultural employment varies inversely with industrial production.

The basic trend in industrial employment was for long an upward one. But then it tended to stabilize, and later, in the last ten to fifteen years, an almost general downward trend has emerged which in some countries has taken the form of a definite drop. Only in a few of the developed countries has this trend been absent. (We are talking in absolute terms. Relatively speaking, industrial employment has fallen in all industrial countries.) But, whether the trend was up or down, industrial employment varied, during the cycle, in the same direction as industrial production, which is the evolution generally regarded as normal by economists.

The long-term employment trend in private-sector services, both traditional and business services, has, as readers will be aware, been upwards in almost all developed countries. It appears that this trend has been accelerated in those countries where there has been a fail in industrial employment. For these countries, including Italy, we can formulate the hypothesis of a "dynamic transfer" between the two sectors. However, this transfer is not such as to prevent unemployment in the non-agricultural sectors. The transfer has probably been stimulated, on the one hand, by the pressure from those looking for work in the service sector after having lost their job in industry, and, on the other, by the growth in the services for industrial firms, as indicated by the studies by Momigliano and Siniscalco (especially 1982). The two phenomena do not coincide, but are connected.

The numbers of people employed in the civil service have grown almost without interruption. On the one hand, the improvement in individual income has expanded the State's financial resources. On the other hand, this improvement has driven up the economic and social aspirations which could not be satisfied by the market. At the same time, there has been a constant increase in the complexity of the functions performed by the public sector, many of them being not at odds to, but complementary with those provided by private enterprise. Ali this, together with measures designed to create jobs for political rather than economic reasons, has led to the continued growth of employment in the civil service. In Italy, employment in this sector during the postwar period has

grown by over 2% a year, even if, in the last five to ten years, this trend has tended to slacken, probably because of budget difficulties.

Self-employed workers in agriculture in Italy are diminishing even more than dependent ones. Outside agriculture, self-employed workers were more or less stationary, or were declining slowly up to 1973. But, after that year, the trend was upwards at a fairly sustained rate. In other words, there was a certain "dynamic transfer" between self-employed and dependent workers in the non-agricultural sectors, like the one noted between total employments in industry and in the private-sector services. All this is true of Italy. But there are unmistakable indications that similar trends obtained in all industrialized countries from 1973 on. And what applies to self-employed workers also applies to employment in small and tiny firms (Sylos Labini, 1986, p. 221). Both the increase in self-employed workers and in the numbers of those employed in small firms was prompted by stimuli of various kinds which will be examined briefly below.

The distinctions between dependent and self-employed workers, between large and small firms and between men and women take on particular importance in industry. For, at least in Italy, the fail in industrial employment was marked in the case of dependent workers, but not in self-employed ones, and was noticeable in large firms, but not in the small ones, and lastly the decline hit men much more than women.

3. The causes of the recent increase in unemployment in developed countries

Generally speaking, and on an aggregate level, the gradual increase in unemployment in the last ten to fifteen years is due essentially to three factors: 1) the slowing down of the growth process — from an annual average increase in income of 4-6% to roughly hall of that figure; 2) the increase in the labour supply, due, to a modest extent, to demographic factors and much more to parity economic and partly cultural ones, which have led a growing number of women to leave their homes and enter the labour market; and 3) the restructuring of industry, which in a number of countries has given rise to a substantial drop in persons employed in this sector.

In recent years, it is not only unemployment which has increased. Employment, too, has gone up. The fact is that the demand for labour has not increased at a sufficient rate to absorb either the growing supply or the unemployed previously employed in industry.

No one doubts that employment depends in the first place on income. But, as we will see, other important factors are involved, which, given a certain increase in income, can give rise to very different results as regards employment and unemployment.

As a first approximation, we may therefore examine the relations between income and employment and between income and unemployment. In the case of employment, we will exclude employment in agriculture, which tends as a rule to follow the opposite path from income, and which, in the developed countries, now represents a very slight proportion of the total.

The relation between rates of change in income and in employment cannot be linear, since, when income increases and increases more, rapidly than productivity, we come up against the availability of manpower, and, when income diminishes, employment sags more because of the increase in productivity which continues, if more slowly, even in periods of a depression. For partly similar reasons, the relation between rates of change in income and of unemployment is not linear either. The two relations may be studied with reference to a given country and to a certain number of years, or by examining different countries. If we make the second comparison, we may consider the data for different industrialized countries in two periods of several years, one characterized by a sustained expansion (1966-73) and the other by a slowing down in growth (1973-85). And in fact the two relations prove not to be linear. For the former, we may apply a function of the type:

$$\hat{N}_E = a \log (\hat{Y} + b) - c \qquad (1)$$

and, for the second one, the equilateral hyperbole can be used:

$$U = a/\hat{Y} \qquad (2)$$

where N_E indicates non-agricultural employment, Y income, U the average rate of unemployment, and the cap over a variable a rate of change. The non-linear forms of the two relations may help us to understand, even if only in an indicative way, why the slackening of growth has had such quantitatively marked effects on unemployment in large numbers of developed countries.
The graphs in the appendix are in line with expectations. However, there is a considerable dispersion of the dots for the individual countries, since other factors than income affect both employment and unemployment. We must therefore estimate the unemployment equation using the three variables indicated above and referring to the countries in question, but only for the period of slow growth, during which in many countries unemployment soared:

$$\Delta U = - a\hat{Y} + b\Delta FL - c\hat{N}_i \qquad (3)$$

where ΔU indicates the change in percentage points of the unemployment rate, ΔFL the percentage in the labour force, and Y and N_i the rates of changes in income and industrial employment. However, between industry and services, there is, as we have seen, a dynamic transfer, even if, owing to obstacles of various kinds, the transfer is not Complete. The greater it is, the smaller the growth of unemployment when industrial employment falls. Hence, instead of industrial employment, we ought to consider, as one of the explicative variables, non-agricultural employment (N_E), and equation (3) becomes:

$$\Delta U = - a\hat{Y} + b\Delta FL - c\hat{N}_E \qquad (3a)$$

We must, however, bear in mind the fundamental distinction between unemployed in the strict sense of the word and persons seeking employment. The unemployed in the first category are those who have been driven out of the productive process either by a fail in demand (which may be expressed by income) or by the direct and indirect effects of restructuring which I shall try to explain later on. As to those in search of employment, their numbers are directly affected by the trend in labour supply, and also by the evolution of total nonagricultural employment. Hence, while taking account of the fact that there are no watertight compartments, we must subdivide unemployment into two categories and link the three factors mentioned above as follows:

$$\hat{U}_1 = - a_1\hat{Y} - b_1\hat{N}_E \qquad (4)$$

$$\hat{U}_2 = a_2\hat{FL} - b_2\hat{N}_E \qquad (5)$$

I was able to carry out an empirical check on these two equations only for Italy, using the time series (see the appendix). For the other countries, the necessary data are not easily obtainable, and a thorough examination is needed, which I hope that others will undertake. I must warn readers that, both in the case of equation (3) and in that of equation (5), the changes in the female work force prove to be more significant than those for labour as a whole. For, in the last ten or fifteen years, it is precisely the influx of women which is largely responsible for the increase in the labour supply. The greater degree of statistical significance of the supply of female labour for unemployment indicates that even today women encounter more serious difficulties than men in finding work. Thus, when there is an increase in the supply of labour, unless the demand increases at a sufficiently rapid rate, it is the women who stand the best chance of remaining unemployed.

The fundamental variables which help to explain the striking increase in unemployment in several industrialized countries are three in number. There is the slowing down of the growth in income, the increase in the supply of female labour and the falling off of industrial employment which is reflected in the growth of the whole of dependent non-agricultural. Of these variables, the supply of female labour depends only in part on specifically economic factors:[3] it depends largely on factors which may be termed cultural ones. Hence, I will not go into the question of why this

[3] The increase in the female labour supply has probably been caused in part by the expulsion from industry of a large number of dependent workers (especially males) and the unsatisfactory pattern of real salaries, which in certain years actually fell owing to fiscal drag. This has encouraged the spread of second jobs and has induced some housewives to look for paid employment.

supply has grown steadily over the last ten to fifteen years. I shall in the present study confine myself to recalling that, among the different factors, we must include the diminution in the average number of children per family, the spread of electric and other domestic gadgets, and the access to high schools and universities, a process which has been even more rapid for women than for men (women started from a lower level). Industrial income and employment, as against this, depend primarily on specifically economic factors. I will dwell briefly on these factors in the last part of this essay. For the present, I will seek to take a closer look at the forces which have led to the fall in industrial employment, a phenomenon which comes under the heading of the vast process called restructuring. To that end, a relatively complex analysis is essential.

4. Technological unemployment and the unceasing redistribution of workers during the growth process

During the growth process, there 15 bound to be a continuous redistribution of workers from agriculture to non-agricultural activities and within each branch of activity. This redistribution is attributable in the first place to technological changes. When, as is frequently the case, these changes entail labour saving in the production of goods already existing, or make possible the production of new goods which save labor in other branches, the result is technological unemployment, which lasts the longer, the slower the process giving rise to the redistribution of the workers, and which diffuses throughout the economic system the fruits of the innovation in the form of larger real incomes.

In order to clarify the essential aspects of the process, we will revert to, and develop, the numerical schema which I put forward some time back in the monograph Oligopoly and technical progress (pp. 136-144 in the 1969 American edition). The schema examines the case of an innovation which entails a reduction in the cost of an existing good. This may be followed or not by a reduction in its price. The economy is divided into three sectors: machines (I), raw materials and intermediate products (Il) and consumption goods (III). In the sequence for the innovative process, which starts from the second sector, there are four periods to be considered, two of which envisage two alternative hypotheses:

A - The period preceding the innovation;
B - The transitional period: the innovation is introduced;
C - Conclusion of the short-term process:
  a) rigid prices and increase in the profits of sector II
  b) rigid prices and increase in wages in sector II
D - Conclusion of the long-term process:
  a) reduced prices and constant money incomes
  b) constant prices in sector II, increase in prices in the other two sectors and in money incomes in all sectors.

In the monograph cited above, I paid special attention to cases A, B and C (a and b); only certain aspects of case D (a) were examined, and only some deductions were expressed, in general terms, regarding case D (b). This is not the place to develop this analysis. Here I shall merely set out the picture as regards employment in the different cases:

	A	B	C(a) and (b)	D(a) and (b)
First sector	700	770	707	825
Second sector	700	700	400	467
Third sector	700	630	693	808
Employed	2,100	2,100	1,800	2,100
Unemployed	—	—	300	—

The process involves changes in the distribution of employment. From period A to period B 70 workers move from sector III (consumption goods) to sector I (machines). From period B to period C, sector I expels 63 workers, while sector TI (raw materials), in which the innovation is introduced, expels 300, and sector III absorbs 63. Overall, in period C 300 unemployed appear on the scene, who, from period C to period D, are gradually reabsorbed: 118 from the first sector, 67 from the second and 105 from the third. The reabsorption is proportionate to employment in period C, during which the innovation is implemented. These movements involve human costs, which are particularly grievous for the not so young workers, who have much more difficulty in retraining — and these costs are all the more serious, the longer the unemployment lasts.

The whole process entails changes not only in the distribution of employment, but also in the system of relative prices. In the schema just put forward, this takes place, when we are referring to the long term, both in the case of flexible prices — D (a) — and in that of rigid prices in the sector in which the innovation takes place — D (b) — since, if we admit that incomes increase in all sectors, prices in the sectors where no innovation takes place cannot but increase. In the first case, however, changes in relative prices take place downwards, and in the second, upwards — and a rise or fail in the average level of absolute prices, as I shall shortly stress, is not without consequences on the growth process.[4]

From my point of view, the relative downward rigidity of prices which has become more and more marked in our time depends on the gradual spread of oligopolistic forms of industry and services and on the growth of trade unions in the labour market. In the last century, when competition and not oligopoly was the rule in the product markets and the trade unions either did not exist or were weak, absolute prices fell as the direct or indirect effect of technical progress. Today, technical progress still determines changes in relative prices, and often falls in absolute prices in the dynamic sectors, but it mainly leads to increases in money incomes, while the average level of absolute prices either increases or remains constant (owing to rising and falling prices canceling each other out): only in very rare cases and to a very limited extent does it fail. In short, in the last century, the fruits of technical progress tended to be distributed mainly through falls in prices, and money incomes remained constant, or rose to a limited extent. Today, they tend to be distributed mainly through the increase in money incomes, and the average level of prices remains constant or rises less than incomes. It is not a matter of indifference, however, whether relative prices change downwards or remain constant, or rise, since only on the first hypothesis can growth in production take advantage of the tendentially generalized fail in costs which takes place when the goods whose prices fail are means of production. This is why, as I try to argue in the monograph mentioned above, when prices are generally flexible downwards, the trend towards hill employment may be furthered by the "spontaneous" market forces, and can be effected in a relatively short space of time, while, when prices are rigid downwards, this trend can materialize in a fairly short time only if it is supported by adequate public measures, and, it should be added, if the international short-term situation is favourable. If public intervention is inadequate and the international situation unfavourable, unemployment may persist for a long time.

The relative rigidity of prices therefore places obstacles in the way of the growth of production and of the absorption of unemployment. Further obstacles originate in the resistance opposed by workers already employed to change in activity. This resistance is of no great importance when the move is from agricultural work to non-agricultural activities (it would seem that life in urban centers is more attractive than a rural existence). But it is substantial within non-agricultural activities. The resistance becomes really strong when it enjoys trade union support and

[4] It may be admitted, but only with reference to the short term, that prices remain unchanged in the innovating sector, and that the gains in productivity remain confined to those firms operating in that sector. In the long run, however, it is in the interest of price leading firms themselves to reduce them within certain limits in order to assist in the expansion of the market and to reduce the risk of other firms entering the market, while, over time, the gradual increase in earnings is bound to spread to other sectors. This increase, on the other hand, prevents the margins created by innovations from being transformed, on the whole, into lower prices.

is institutionalized by legislative measures. In the light of the above analyses, it will readily be understood that, beyond certain limits, this resistance curbs growth and productivity. (This is true of a centrally planned economy, not less than for a capitalistic one.)

The redistribution of workers meets with even fiercer resistance if, in the system of professional training, there are flaws which prevent workers who have become surplus from being retrained, even assuming that they are willing to accept such a course and do not offer resistance to being transferred. The problem becomes extremely serious when the innovating sector needs workers with new qualifications, both during the period when the innovation is being effected and in the long term. If these flaws are encountered, workers in the other sectors are unable to transfer because they are unable to retrain, and the innovation itself cannot be implemented or can only be carried out within narrower limits than would otherwise have been possible. (In the schema set out above, potential transfers affect a certain number of workers in the third sector during periods B and C and a larger number of workers in the second sector in periods C and D.) It is true that the first sector could turn to the new recruits; in that case, the workers who had become redundant would stay unemployed. But, if the flaws also apply to the educational system, it will not be possible to find suitable workers even among the new recruits, or at least not in sufficient numbers. This prejudices growth in production and long-term growth in employment (cf. Momigliano, 1985, especially pp. 111-9).

It might appear that, for the purposes of achieving growth, we do not need a particularly high level of efficiency on the part of the system of professional training and of education, since, for equipment of the novel type, one can have recourse to imports rather than produce them at home. Moreover, still in the long period, it is possible to redistribute the workers by not replacing those rendered redundant by the imported equipment as they reach pensionable age, and by extending production and employment, if the conditions of the economy permit, in the traditional sectors and in those which rationalize their methods of production by the use of imported capital goods. That is of course possible. But a country which relies more and more on other countries will witness a decline in its capacity for growth which, precisely in the long run, depends mainly on its ability to innovate. Moreover, the method of not replacing workers on retirement may damp down the increase in unemployment, but leads to a slowing down of the redistribution of workers between the various activities, and hence in the growth process as well.

The redistribution of workers may be rendered necessary not only by technological innovations, but also by changes in the composition of demand. However, in the analysis of these problems, priority must be given to innovations, especially when reference is to the long period, since these changes are generated by the production of new goods. In other words, in the long term, changes in demand, even if determined by human needs, are subordinated to technology: in the course of time the average propensity to consume has not fallen, contrary to what Keynes thought, owing first of all to the frequent appearance of new goods. In the short term there may be pressures from demand which affect the whole economic system. This is the case with pressures flowing from credit or taxation policy or from the international cycle. In cases such as these, too, there are differential changes in individual types of demand and in technologies themselves which in certain respects are conditioned by demand. If the pressure is upward, income increases at a steady rate, and the redistribution of workers proceeds more swiftly than is the case when growth is weak or zero, or, even worse, when demand is falling. The Keynesian theoretical system, as we will see, addresses these very problems connected with changes in demand.

5. Industry: absolute and relative saving of labour

The innovation which we have just discussed may be termed autonomous in the sense that, at least directly, it does not depend on a previous economic stimulus. However, there are different stimuli of this type which can promote the implementation of technological innovations. One is the increase in demand; another is a rise in wages. And these are only two examples. As regards the mechanisms by means of which the increase in demand can stimulate the implementation of

innovations and the increase in labour productivity ("the Verdoorn law"), I refer the reader to other studies of mine (especially Sylos Labini, 1984, ch. 4). Here I would merely list certain points which I will then develop.

The increase in wages should be seen in relation to prices — both for finished products and for machines.

The increase in the ratio of wages to prices of finished products leads to labour-saving in absolute terms, not only because it creates an incentive for forgoing the use of a certain number of workers, thus contracting production, but also because it stimulates the more rational use of workers at the same level of production. For, when labour becomes more expensive, managers at a certain point are led to "save it" in terms of units produced, and hence to redistribute duties and reorganize the productive process. No doubt that could be done earlier on. But, without the spur of necessity, the mental and organizational effort would not be made. Necessity sharpens the mind.

The relative saving of labour is the consequence of an increase in wages relative to the prices of machines, and involves a greater use of machines. In general, the two types of labour-saving mean an increase or a speeding up of the increase in labour productivity itself. These increases tend to act as a brake on growth or to reduce the level of employment. Strictly speaking, in absolute labour-saving, the comparison is not so much between wages and the prices of finished products, as between the unit cost of labour, given by the ratio of wages to productivity, and prices. For, even in the short run, managers count on a certain increase in productivity flowing from earlier decisions. They are prompted to speed up the increase under way, if it does not prevent the cost of labour from growing more rapidly than the prices of finished products. The comparison is different when we are referring to the long run and the growth of wages raises the problem of a dynamic substitution between labour and machines. Here, the terms of the comparison are wages and the prices of machines.

Absolute labour-saving has never, as far as I know, been consider- ed by any current of economic theory. Relative labour-saving, on the contrary, has been repeatedly studied. But we must go back to Ricardo to find the question formulated in the proper terms, that is, in the simple and impeccable terms of dynamic substitution: the reduction in the use of labour and the increase in the use of capital goods as a result of an increase in wages which makes it worth while to use a new technology. The neoclassical economists, on the contrary, approached relative labour-saving from the angle of static analysis and hence on the hypothesis of a given technology. Less labour and more (fixed) capital would have been used if wages rose relatively to the "price of capital". And *vice versa*. The neoclassical economists reason in terms of bidirectional and reversible relations.

A special position was adopted by Keynes and elaborated in his General Theory. "When a man acquires an investment or a capital asset", as he writes, "he acquires the right to the series of future returns which he expects to obtain from the sale of his product after deducting the current expenses needed in order to obtain that product, for the life of the capital". Hence, total investments depend jointly on their expected yield (the marginal capital efficiency) and the rate of interest. In this investment function Keynes considers only the nexuses of complementarity and not of substitutability between the means of production, and in particular between labour and capital. Indeed, with the phrase, "after deducting the current expenses needed to obtain that product", he rules out the possibility of taking account of the marginal productivity of the means of production, which must of necessity be regarded as partial derivatives in relation to production — an idea compatible with that of substitutability, but not with that of complementarity. This conception of investment is confirmed by the proposition that, if the propensity to consume is assumed to be constant, the level of employment increases *pari passu* with an increase in investment (pp. 95 and 113). In other words, investment and employment vary in the same direction (complementarity), and not in opposite directions (substitutability).

It is important to note that the two Keynesian propositions are based — like, for that matter, the whole analysis of the General Theory — on the hypothesis that technology is given. In this respect, the Keynesian analysis places itself on the same plane as traditional theory. It diverges from

it only to the extent that it contemplates only the complementarity nexuses between labour and capital goods, or iet us say between labour and machines.

In short, when technology is assumed as given, as in Keynes's analysis, it seems entirely appropriate to consider a nexus of complementarity between machines and labour, but it must be admitted that machines tend to substitute labour when account is taken of technical progress, and it is recognized that the incentive for substituting machines normally comes from an increase in wages. And it is in these terms that no other than Ricardo expresses himself.[5] However, if wages remain unchanged, this incentive may be attributable to a fail in the prices of machines caused by technical progress. In the long run, the prices of machines may stay unchanged, while wages increase, or may increase less than wages if the industrialists producing the machines step up their firms' productivity thanks to technical progress. We must, however, bear well in mind that in developed countries nowadays there is a widespread belief among economic operators that wages tend to rise systematically, so that the producers of machines constantly seek to increase the efficiency of their products, and take it for granted that wages will go up. In these circumstances, it is not possible to establish whether the first impulse should be attributed to the increase in wages or to the steps taken by the men producing the machines. We probably have to recognize that technical progress, wages and the prices of the machines all interact.

In conclusion, if we assume that there is no change in technology, the relation between investment and employment is direct, while, if we take account of labour-saving innovations, the relation — given the level of output — is inverse. On the former assumption which many years ago I called "the Smithian assumption" — the complimentarity between the factors predominates. On the second one — which I called "the Ricardian assumption" — it is "dynamic substitutability".[6] Complementarity prevails again, this time together with multiple technological changes, when not only labour but other means of production too (sources of energy, raw materials, intermediate products and machines) become more expensive relatively to the prices of finished products. The situation becomes particularity serious for firms if production is sluggish or if is growing slowly, since this tends to lower the degree to which the plant is utilized. As a result, profit margins tend to fail steadily. In order to restore them, managers set in hand a restructuring which aims at saving on the coefficients of all means of production, which include both labour and machinery. (We can then speak of "total restructuring" as opposed to "partial restructuring" which takes place when the saving affects mainly a single factor, usually labour.) If in a certain period there is an increase in real interest (the difference between nominal interest and the rate of increase in the prices of finished products), there will be a further incentive to save on all coefficients, since interest is a "tax on the entrepreneurs profit" (Schumpeter). Hence in a period in which real interest increases markedly — as was the case in a number of developed countries after 1978 — we need hardly be surprised if, among the variables explaining the evolution of labour productivity, we find real interest (see Appendix, § 2 (a), equation 3 B).

When various cost factors increase systematically the drive to effect savings n the coefficients of production is all the stronger, the more resolutely the aim of exchange rate stability is pursued, and, at any rate, the greater the obstacles to the shift of costs increases onto prices. As to this second condition, paradoxically enough, it seems that this transfer usually proves more difficult for large firms than for small ones. This is because large firms, for whom economies of scale are more important, produce relatively standardized goods which are more vulnerable to foreign competition, including that from newly industrialized countries which in certain sectors (such as steel and chemicals) have overcome the barriers of dimensions not permitting economies of scale but have

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[5] Machines and labour are in constant competition, and the former can frequently not be employed until labour rises" (RICARDO, 1951, p. 395).

[6] The reader may care to compare the study touched upon here lightly and the thorough analysis provided by PASINETTI (1981, Chapter IX). The path followed is different, but the conclusions converge.

retained the advantage accruing from much lower wages. The small firms on the contrary, produce highly differentiated goods, which are more fully protected against foreign competition. In other words, among the larger firms we frequently come across situations of concentrated and mixed oligopoly, while among the small firms there are frequent situations of differentiated oligopoly. It is true that the lack of pressure from foreign competition does not save a considerable number of small firms from bankruptcy — on the level of publicity and that of efficiency, domestic competition exercises considerable pressure; but it is still true that foreign competition is not decisive, and that a number of small firms manage to transfer their increase in costs to prices. This may apply, it should be made clear, to the majority of small firms, but not to all. It does not apply to the small firms specialized in high technology goods for the foreign market as well as for the domestic one, and applies only in part to firms supplying goods and services to large firms. Overall for the small firms, the effort to restructure will be less intense, and in any case it will be different. It is more likely to affect the differentiation and the diversification of the products than the reduction in costs. Moreover, the latest developments in electronics and, in particular, in microelectronics have given some very small units a "shot in the arm".

Lastly, especially in Europe, there has been a drive from the trade unions and from a labour legislation which has been too concerned about those already in employment and too little about those in search of a job, which has created a host of constraints for the large firms, leaving a greater margin of freedom to the very small ones. Among other things, this ha given rise to a rapid increase in types of intermediate goods and services, passed on under the subcontracting system by the large firms to the small ones.

As a result of all these considerations, small firms have remained relatively protected from the powerful pressures exercised by the cost of labour and foreign competition on the larger firms. However, these large corporations have been induced to set in hand a radical restructuring which, for reasons set out above, has affected both labour and fixed capital. Thus, the distinct fail in industrial employment is noticeable only in the large firms; in the smaller ones, employment has shown a tendency, though a slight one, to increase the numbers employed. This phenomenon has been studied in the case of Italy[7], but, from numerous indications, it appears to be a widespread tendency.[8]

6. Unemployment in industry: Ricardian, Keynesian and neoclassical unemployment

The unemployment which arises from a restructuring, whether total or partial, appears at first blush to be technological unemployment. This type of unemployment comes entirely within the scope of unemployment in the narrow sense of the word; it may occur, however, if, given a sustained increase in the cost of labour, the demand for goods increases at an insufficiently high rate. However, it is possible that the demand can drop without technique changing. If we term "Ricardian" the unemployment imputable to labour-saving innovations, we may term "Keynesian" the unemployment caused by lack of demand. Ricardo implicitly alludes to both "autonomous" innovations, that is, not stimulated by an increase in the cost of labour, and to innovations which *are* thus stimulated. For he says that machines *can* "frequently" be used — he does *not* say, of

[7] The phenomenon of a simultaneous saving of labour and fixed capital was brought out by HEIMLER and MILANA in 1983; it was subsequently studied systematically by BARCA and MAGNANI in 1985. BARCA (1987) then had the merit of stressing the dichotomy in the evolution of employment in large and small firms, and also acutely identified different reasons for this dichotomy, especially those concerning the differentiation of the products and foreign competition The phenomenon of a simultaneous saving of labour and capital is probably attributable to specifically economic impulses, as well as to the characteristics of the new microelectronic technologies; cf. MOMIGLIANO (1985).

[8] OECD, *Employment Outlook*, September 1985, Paris, p. 71.

necessity after labour becomes more expensive. Hence, when talking of Ricardian unemployment, we may refer both to technological unemployment stimulated by an increase in the relative cost of labour, and also to unemployment depending on "autonomous" innovations, which, in the case of labour-saving innovations, we will call "technological unemployment in the narrow sense". In contrast to Ricardian unemployment and to the Keynesian type, stands the neoclassical version, which is the one attributed to excessively high wages rigid downwards. It is true that, in the Ricardian type of unemployment, wages play an important role. But, in that conception, what counts is the changes in wages, not their absolute level. Only Ricardian and Keynesian unemployment can be used in dynamic analysis. Neoclassical unemployment has an irremediably static character. To be more precise, the original Keynesian theory is static, but it lends itself to use in dynamic analysis.

On the basis of Keynesian theory, we can write the equation:

$$\hat{N}_i = \hat{Y}_i$$

where N_i is the volume of industrial employment, Y_i is industrial production, and the cap indicates a rate of change. Recognizing that the labour productivity (π) is not constant, as Keynes assumes, but tends to increase, that relation must be supplemented as follows:

$$\hat{N}_i = \hat{Y}_i - \hat{\pi}. \qquad (6)$$

In schematic terms, we have a Keynesian type of unemployment when Y_i diminishes, π being equal, while if, Y_i being equal, π increases owing to an autonomous innovation, a technological unemployment in the narrow sense appears.[9] On the contrary, we have a technological unemployment in the broad sense if it is admitted that the increase in productivity depends not only on autonomous innovations, but also on innovations induced by increases in wages and increases in demand. Changes in productivity may then be explained by the relation:

$$\hat{\pi} = k + \alpha\hat{Y}_i + a(\hat{L} - \hat{P}) + b(\hat{W} - \hat{P}_{ma})_{-t} \qquad (7)$$

where Y_i, is introduced on the basis of "Verdoorn's law", *L* is the unit cost of labour (W/π), P and P_{ma} are the indices of the prices of the finished products and of machines, W is the wage index and *k* is a constant representing productivity increases that take place owing to innovations not depending on increases in demand, in the cost of labour or in wages. (In periods when there is a sharp increase in real interest, we may include as an additional variable the difference between nominal interest and the rate of change in the prices of finished products.)

Putting $c = 1 - \alpha$ and neglecting *k*, equation (7) becomes:

$$\hat{N}_i = c\hat{Y}_i - a(\hat{L} - \hat{P}) - b(W - \hat{P}_{ma})_{-t} \qquad (7a)$$

If we admit that the evolution of unemployment in the narrow sense corresponds to the evolution of industrial unemployment, and bearing in mind equation (4), we have:

$$\hat{U}_1 = -c'\hat{Y}_i + a'(\hat{L} - \hat{P}) + b'(\hat{W} - \hat{P}_{ma})_{-t} \qquad (8)$$

It may appear insufficient to consider the increases in productivity imputable to autonomous innovations simply by introducing a constant in equation (7). However, though these innovations may be extremely important in individual cases, we may consider that, year by year, it is the innovations induced by changes in demand and wages which hold the key, since these changes take place almost uninterruptedly. As to the time lags in the explicative variables, on the basis of the previous considerations, it may be assumed that the Keynesian effect and the absolute saving of

[9] A type of unemployment in the narrow sense of the word appears in the case considered in section 4 during the passage from period B to period C. It should be pointed out that in section 4 I have adopted a microeconomic approach, whereas here my analysis is concerned with aggregates and averages.

labour take place in the short run — in the same year, or at most with a year's delay — while the relative saving (substitution of machines for labor) takes a longer time.

Three observations.

1. The increase in income drives productivity up (equation 7) and therefore gives a downward push to employment (equation 6.) But the same increase pushes up employment again (equations 6 and 7a). If employment increases, unemployment — ceteris paribus — decreases. The conflicting effects are embodied in two coefficients: c and a. If, as is in fact the case, $0 < c < 1$, then $1 — \alpha = c > 0$, that is, the increase in income can drive up both productivity and employment. The actual outcome will depend on the values of the two coefficients and on the size of the increase in income.

2. There are autonomous innovations that push up productivity and — if output does not increase enough — pull down employment. But there are other autonomous innovations that give rise to the production of new consumption goods which are not substitutes for goods already being produced and which therefore push up total consumption and employment.

3. The relations just described apply to industry. If we admit that industry is the sector which imparts the most dynamic and vigorous impulses to the whole economy, we may assert, with the necessary caution and the appropriate emendations, that these relations may be extended to the other sectors. The equations which emerge at the aggregate level flow from shifts in the distribution of types of production and of the workers like the shifts analyzed in § 4. The impulses from the innovations, although they affect the whole economy, act in very different ways. So that the aggregate analysis must be completed by an analysis to be carried out on the disaggregated level, both as regards the evolution of the quantities produced and the prices and incomes. This double analytical exigency comes out fully when we face the task of interpreting the restructuring which has taken place in the industry of a large number of developed countries in the last ten to fifteen years. At this point, we must again raise the interrelated questions of why industrial employment has fallen in numerous developed countries, but not in others? And why has unemployment in certain countries increased distinctly less than in others?

A reply to the second question may be found in equation (8), the econometric estimates for which are fairly satisfactory, both for Italy — a country in which the increase in unemployment has been relatively marked — and for the United States and Canada, where the increase has been more modest (see appendix, § 2 b). Since the evolution of production has not been very different, whereas there was a difference in the cost of labour both in relation to the prices of finished products and of machines, we ought to conclude that the difference as regards unemployment depends to a large extent on the movements of relative wages. I will shortly revert to this point. For now, we must examine in more general terms the question of the relations between wages and unemployment — a question which is important for its conceptual implications as well.

7. Relation between wages and unemployment

Equation (8) implies a direct relation between wages and unemployment. For it is often argued that, in a static reference framework, neoclassical theory itself postulates a direct relation between wages levels and unemployment. However, on a specifically dynamic plane (when rates of change appear over time, we are certainly on a dynamic plane), the Philips relation, which is widely accepted, postulates an inverse relation between rates of changes in wages and unemployment.

Which of these two relations should be regarded as valid, the positive or the negative one?

The reply is that both are valid, provided that it is clearly understood from which side the impetus comes. When it is from wages, unemployment varies in the same direction. When it comes from unemployment, wages vary in the opposite direction. If the workers' services become more expensive, managers seek to save on labour, and unemployment tends to increase (and here the positive relation is valid). If, on the contrary, unemployment increases, or if the availability relatively to demand for their services increases, wages tend to fail (and here the inverse relation applies). The two sequences may appear unified if we adopt a neoclassical stance. But this approach would be misleading. The neoclassical economists reason in terms of an equilibrium level of wages

compatible with full employment. If, for any reason, a certain amount of unemployment appears, this will force wages down (and here it seems that the reference is to the second sequence): if we assume that there are no obstacles to this diminution, the unemployment will disappear. Vice versa, the unemployment will not disappear if there are obstacles to the fail in wages which are stuck at too high a level. And here it seems that there is some resemblance with the first sequence. In reality, the resemblance is only formal. The neoclassical analysis refers to purely hypothetical changes — "instantaneous" changes. The analysis suggested here refers to actual changes taking place over time. Technological and organizational innovations are excluded by the first analysis, whereas the second one regards them as essential. It is only hen we reason in terms of time sequences that the need emerges to raise the problem of the origin and the time sequence of the different variations.

Some time back we considered an equation — number 8 — which can give formal expression to the first sequence: wages → unemployment; the second sequence (unemployment → wages), which involves an inverse relation, may on the contrary be expressed by an equation of the type:

$$\hat{W} = a - b\ \hat{U} + c\ \hat{V} \qquad (9)$$

This equation expresses the Philips relation integrated later by Lipsey. In addition to unemployment, it includes the cost of living, since nowadays in capitalistic economies the trade unions (both in the periodic wage negotiations and in particular indexing agreements) are in a position to drive up wages at least in proportion to the cost of living even in the short term — let us say in a year.

Both the unemployment and the wages equation are important for the interpretation of the observable movements in the labour market and in order to prepare the necessary policies, specially those designed to combat unemployment. To that end, however, we must refer not simply to two equations, though interrelated, but to a model, even if it is ultrasimplified, of general analysis, based on the concept of interaction (see appendix, § 3). We may consider a particularly significant case — the effects of a wage cut — a prescription insistently proposed before Keynes, and again put forward of late after the beginning of what has been called the crisis of the Keynesian theory.

Keynes, as we all know, had advanced a highly articulated criticism of that prescription. The nub of his contention was that, save in circumstances which are unlikely to arise, a cut in wages would have led to a proportionate fall in prices, and hence have no effect on the real demand for goods and labour. In reality, the effects may not be nil, but negative, if it is admitted that prices tend to fail less than wages (Sylos Labini, 1984, ch. 7). In these circumstances, total purchasing power falls. It is true that, as equation (7a) indicates, the drop in wages, relatively to the two categories of prices, tends to stimulate employment; but the stimulus, which in any case is modest (see equation 15A in the appendix), takes place with a time lag. The momentum caused by the flall in purchasing power may trigger a negative spiral, which the subsequent stimulus can at most slow down but not reverse. It is also true that the reduction in prices determined by the wage cut strengthens the international competitiveness of the goods produced by the country in question, but all the econometric estimates agree in indicating an elasticity of international demand relative to prices which is low and in any case not such as to set in motion offsetting effects. In the case of wages which do not grow in proportion to labour productivity or which actually stay unchanged, there are unfavorable consequences on growth, since the demand for consumption goods stagnates and does not grow quickly enough. A general cut in wages, introduced once in a while, or a systematic lowering of the labour costs (the ratio of wages to productivity) may have positive effects on growth when deficit public spending can increase without driving up interest, or when foreign demand increases in an export-oriented economy. This was the case for example of South Korea and Taiwan, and, in the past, of Japan too. In all the other cases, the prescriptions for a general cut in wages or of a systematic lowering of labour costs cannot be favourably regarded — independently of their practicability.

8. The flexibility of the labour market

A relatively rapid growth of wages drives up the rate of increase in productivity. This growth, however, may help to increase unemployment. The first consequence is generally regarded as positive, not only

for growth, but also for international competitiveness, which, even if in the short run it may be undercut by an excessively rapid increase in the unit cost of labour, may in the long run be strengthened (for, in the long run, wages can hardly increase more than productivity). The second effect — the rise in unemployment — is negative. However, it is not a necessary effect. The chances of its taking place are the greater, the slower the increase in income.

In certain circumstances, then, the increase in wages may contribute to the growth of unemployment. Despite superficial resemblances, this thesis is quite different from the one which attributes unemployment to the rigidity of wages, a thesis once again debated of late, after the publication of the essentially empirical research of Grubb, Jackman and Laylard (1983) and of Coe and Gagliardi (1985), who use certain coefficients of the Phillips and Lipsey equation to define wage rigidity. This rigidity, according to them, is all the greater, the larger the percentage increase in unemployment needed in order to neutralize, by depressing real wages, the increase of one percentage point in inflation caused by an external shock (such as the increases in the price of oil or raw materials). If we use a graph to show the increase in unemployment in the period 1975-82 and the short-term index of the rigidity of real wages, we will note a direct relation between the two quantities. This suggests that there is a nexus of cause and effect between the rigidity of real wages and unemployment.

Such a generalization cannot be accepted. Only if we restrict our analysis to those peculiar external shocks caused by the increases in oil and raw material prices can we say that the downward rigidity of real wages did play a role in the recent trend of unemployment. Those shocks gave rise to a violent worsening in the terms of trade of industrialized countries — a situation, as Michael Posner reminded me, that would have required a fail in real wages to avoid a profit squeeze and a consequent decrease in investment and employment. In fact, the prices of finished goods tended to increase owing to the rise in the prices of imported materials; but, in several countries, money wages increased in proportion, or even more than in proportion, to the increase in prices due to raw materials. Now, this impulse was common to all industrialized countries, though in different degrees, and, taken by itself, would not have required substantial adjustment in exchange rates to avoid a serious profit squeeze (cf. Sylos Labini, 1984, ch. 7.3); such adjustments, however, were necessary in those countries in which money wages were rising at a relatively high speed, owing to trade union pressure and to indexation. In such countries, real wages proved to be particularly rigid downwards in spite of the increasing unemployment; governments tried to keep exchange rates stable, and profits were squeezed. (Note that, given the indexation system and trade union pushfullness, a policy of fully flexible exchange rates would have led to an acceleration in the rate of inflation, but would not have determined a reduction in real wages and would not have avoided a profit squeeze.) The restructuring process is to be seen mainly as the reaction of firms in an effort to recover their profit margins; such a restructuring implied an acceleration in the introduction of labour-saving innovations, especially by large firms, which were more exposed than smaller firms to international competition (see above, sect. 5). The downward rigidity of real wages has played a role in the increase in unemployment precisely because money wages increased too quickly, so that it is not paradoxical to say that the trouble with wages is not their downward rigidity, but their upward flexibility. In any case, the conditions in which wages can become an important factor in driving up unemployment can be analyzed more adequately and more generally if we take due account of technological innovations and if we look at the changes in labour costs per unit of output in relation to the prices of finished goods, and at those of wages in relation to the prices of machines (see sect. 6).

Flexibility: this is an ambiguous and elusive concept which has to be more clearly defined. There are three important aspects: the earnings, hours and mobility of the workers. In its turn,

mobility may take place within the units of production or may concern hirings and dismissals. The greater the constraints on mobility in this sense, the stronger will be the upward tendency both for productivity and wages. This is true also of constraints on hours. Hence, excessive upward flexibility of wages would appear to be, at least in part, the result of too low a flexibility in the second and third sense. We must therefore distinguish sharply between flexibility as regards wages and flexibility as regards the other two aspects of the labour market.

If it is true that factors making for rigidity in the labour market are not a novelty, but to a great extent were gradually introduced after the second world war in most developed countries, why, we wonder, did unemployment up to ten or fifteen years ago tend to fluctuate at relatively low levels, and at any rate did it not tend to rise in any country?

In principle, the answer is simple. It is because the growth in income took place at a sustained rate. The Keynesian income effect nullified, so to speak, the braking effects stemming from the increase in wages and the gradual spread of the rigidity factors in the labour market. Since the point at which, for domestic reasons and still more for international ones, the growth of income has slowed down, the braking effects have asserted themselves. And that happened at the very moment when the labour supply was tending to increase rapidly.

The flexibility of the labour market influences even the composition of income. *Given* that flexibility, the rate of growth of employment tends to be higher, the more rapid the growth of income. *Given* the rate of growth of income the rise in employment tends to be all the more rapid, the greater the degree of flexibility of the labour market. More generally speaking, employment can grow not only because income grows, but also because the weight of relatively high labour-intensive activities grows. This change tends to force down the average rate of increase in productivity; but — contrary to the belief widely held by economists — this is not necessarily a bad thing. It is, if it is associated with financial losses by various firms, which in this way run the risk of bankruptcy. It *is*, if it indicates a reduction in international competitiveness. But, if it does not' give rise to this kind of effect, it is not a bad thing. It may even be a good one. To illustrate this point, let us consider the case of an extension of part-time work, which does not meet with obstacles when the flexibility of individual workers' hours is considerable. Let us suppose that, in a given period, the level of employment, measured by the number of persons, is 100 million, and that, in a subsequent period, it rises to 110 million. Let us suppose, too, that, in the first period, 90 million persons are employed full-time and 10 million part-time, while in the second period all the 10 million additional workers are employed part-time. If the total productivity of the system is proportionate to the hours worked, it will not increase by 10%, like employment, but by a smaller figure. The increase in employment does not harm international competitiveness, provided of course that the part-time workers are paid half wages. And it will not hold back the growth of income, but will on the contrary encourage it, if there is no other way of employing these additional workers.

This condition is not infringed even by the growth of employment in the services which do not call for special skills, but which are self-financed. It may be infringed by the extension of non-market activities which are financed from public funds. These activities, however, may have an indirect and delayed productivity, as is the case where the environment is protected and the artistic patrimony administered judiciously. The rapid extension of these activities may run into obstacles when the budget deficit is already considerable. Moreover, if firms have to shoulder the costs of protecting the environment, we have an infringement of the condition as regards international competitiveness, but this obstacle can be overcome by appropriate agreements with competing countries.

9. The reduction in working hours

The question of part-time work is closely connected to that of the general reduction in annual working hours, which some economists and large numbers of trade unionists put forward as one of the cures for unemployment.

In order to be able to form a critical judgement on this question, we may find it useful to run over certain facts.

Over the last hundred years, there has been a systematic reduction in the working week in all developed capitalist countries. The increase in labour productivity has to a great extent been translated into an increase in production and in part (let us say a quarter) into a reduction in working hours. If we take account of the longer holidays, working hours have been roughly halved. The reduction is even greater if we refer to the whole of each individual's working life and take account of the raising of the school-leaving age and of the lowering of the pensionable one.

If we consider the problem in the period closest to us, circumscribing the analysis to the last thirty years and to Italian manufacturing industry, it would appear that this trend has not progressed substantially, since there has been no marked reduction in contractual working hours. In fact, it is not so. There has been a sharp fail in the hours actually worked, firstly because of the reduction in overtime, both owing to the constraints imposed by the trade unions, with the backing of the majority of the workers and of the greater cost of overtime. In addition, there has been an increase in the number of annual holidays. In Italy, for example, but the same observations apply to the other countries, the average hours actually worked every year by each dependent worker in manufacturing industry from 1954 to 1982 have fallen by 25-30%, so that, if we admit, as seems to be the case, that the order of magnitude of total hours worked in 1954 is the same as that for 1983, in that year the employees of manufacturing industry, given equal annual working hours per person, instead of numbering over four million and a half, would be three million and a half, *i.e.* roughly as many as in 1954 (see graph 9 in the appendix). Hence, on a purely arithmetical level, it would appear that the increase of over a million workers should be related to the marked fail in the number of hours actually worked.

However, caution is indicated, since the diminution of hours does not automatically lead to an increase in the numbers employed. In certain circumstances, it may even involve a drop. A non-temporary reduction in working hours is at the same time both a cause and an effect of profound transformations in the firms' management systems, and often even in the types of plant. It is not always the case that reductions in hours are the result of negotiations with the trade unions. It is more often the result of a process about which none of the protagonists is initially very clear. It happens that, during every dip in the cycle, overtime is reduced too. On the contrary, those employed are reduced to a limited extent, both in view of the difficulty of dismissing them and of the advantages of keeping expert workers until better times come round. When conditions pick up, the workers are utilized more effectively, and for a larger number of hours. But recourse to overtime meets with growing opposition; and then new workers are taken on. If, however, the increase in the demand for goods is slight, and the cost of labour per unit produced continues to rise, firms tend to step up productivity at a faster rate by reorganizing the productive apparatus. In these circumstances both the total hours worked and the numbers of workers employed may fall. It is precisely this pattern which can be seen at the present time in Italy. The question can be clarified by reference to graph 9. From time to time, there are "leaps" from one function to another, and every leap follows a cyclical dip. It is important to note that, in the last few years, there has been a fail not only in hours but also in numbers of persons employed, so that at first blush this does not seem the ideal situation for a general (contractual) reduction in annual working hours.

The above analysis applies to manufacturing industry, which is the most dynamic sector of the economy, and for which the data are relatively more reliable than those available for the other sectors. We must, however, bear in mind that the products of manufacturing industry are exposed to foreign competition. This competition forms obstacle to the reduction of working hours which usually entails an added cost for firms. Undoubtedly, hours in other sectors cannot diverge too sharply from those in manufacturing industry, but a certain divergence can take place, and this not infrequently tends to be in the workers' favour, since these other sectors are not directly affected by the limiting factor of foreign competition. Moreover, this limit, like the one with which firms are

saddled for the costs of countering or preventing pollution, can be overcome by international agreements.

All in all, it does not now seem wise to suggest a generalized reduction in working hours. In the long run, however, annual working hours will continue to fail, while part-time work will become more and more frequent and the two trends will eventually converge and merge.

10. A reference model

In concluding his analysis, Keynes recommended that, in conditions of widespread unemployment, one should undertake a decided expansion of public expenditure, independently of a corresponding increase in receipts. Indeed, using paradoxical arguments to sweep away the resistance of the diehards who were contrary to any increase in deficit spending, he argued in favour of the usefulness in these circumstances of an absolutely unproductive type of expenditure.

Nowadays, there has been a profound change in structural conditions. The Keynesian model has a sharply reduced interpretative power, independently of the logical validity of all its components. The phenomenon of stagflation offers the most startling indication of the change in conditions. For some years, moreover, given the high level of the public deficit in almost all industrialized countries, mainly because of social and military expenditure, all of them unproductive, economists, who albeit in an independent and original spirit accept Keynes' message, when faced with extensive and growing unemployment, recommend, not the expansion of public expenditure in general, but the increase in public investment, the creation of conditions calculated to stimulate the increase in private investment and a policy of expansion elaborated jointly by the most developed countries, since international economic relations are now, for various reasons, incomparably closer than in the past. (It is worth noting that, strange though it seems in the case of an English economist, Keynes worked out his theory assuming a closed economy.)

On this level, however, it is no longer possible to confine the analysis to the variables which appear directly in the labour market: employment, unemployment, productivity and wages. It is essential to refer to a model of general analysis, though a highly simplified one. I give a model of this kind in the appendix, to which I have referred in discussing the question of a wage cut. Here I shall merely draw the reader's attention to two sequences which can be identified with the help of that model.

First sequence: wages-profits-investment. An increase in wages — caused for example by a fail in unemployment — drives up the demand for consumption goods, and, by reducing the degree of capacity unused, the demand for investment goods too. However, if the increase in wages becomes more rapid than the rise in productivity, it will drive up prices. But, given the value of coefficient a_2 in equation 2M in the appendix (cf. Sylos Labini, 1984, ch. 7), the shift onto prices of the cost of labour is only partial, and hence the rate of profit tends to fail, giving investment a downward push as a result. Moreover, the increase in wages and in demand for consumption and investment goods sends up imports. If this increase becomes more rapid than that for exports a trade deficit arises (or increases). This may lead the monetary authorities to impose a credit squeeze usually by raising the rate of interest, with a negative effect on investment. The positive and negative impulses are combined in different ways. The prevalence of the ones or the others will depend on the intensity and the duration of the different impulses and on the value of the coefficients of the equations which express them.

Second sequence: prices-wages-unemployment. Pressure making for the increase in prices may come from abroad, or from the increase in the prices of imported raw materials or from an increase in the prices of finished products. (The two categories of prices follow different types of logic and often behave differently.) The prices from which I have started are the wholesale ones for domestically produced goods. The increase in these prices sends up the cost of living, the evolution of which does not as a rule coincide with that of wholesale prices, not only because the ratio of retail to wholesale prices is not constant, but also because the cost of living includes those particular prices represented by rents for housing and the rates of public-sector services. Hence, the rise in the

cost of living drives up wages; this increase may be accelerated by a fall in unemployment or may be braked by an increase in unemployment too. At this point, we may be tempted to concentrate our attention on the relations between wages, prices and unemployment and to raise the question of the trade-off between unemployment and inflation and the question of the NAIRU (non-accelerating inflation rate of unemployment). But the reference model, however simplified, brings out the fact that the nexuses between wages, prices and unemployment are many, and some of them oblige us to examine the pressures stemming from other economies. This can help to make it clear how partial, and hence — except in special circumstances — how misleading the discussion of these two questions may be if we confine ourselves to studying them in the context of the ages-prices-unemployment variables, that is, if we take as our sole point of reference the Phillips-Lipsey relation (equation 8M).

11. Concluding remarks

In present circumstances, unemployment is a less serious problem from the economic point of view than it was at the time when Keynes was writing, but it is more serious in other respects. The analysis which can help to clarify its origins is different today, just as the strategy to combat it is different. It is much more complex. When we tackle the analytical problem in its general outlines, the differences are not obvious. Wages and demand, which most economists regard as the two fundamental factors, are linked to two well known points of view, those of Ricardo and Keynes. The differences, however, emerge fully as the analysis develops. What is more, there is the question of the flexibility of the labour market, which is only partially linked to the wage question and which in any case to a large extent represents a problem of a novel type. The above considerations apply to dependent workers. For several decades, the number of self-employed workers in the developed countries has been declining. However, it was never negligible, while the economists have, wrongly, almost completely ignored the question. This, in the present day, is all the more inadmissible, since, in the non-agricultural sectors, the ranks of self-employed workers are on the increase. No doubt it is somewhat difficult to find a regular pattern in the evolution of the aggregates formed by the self-employed workers. As regards Italy, we have identified one pattern (an inverse correlation) by comparing changes in the self-employed workers in agriculture with those in industrial production. But the flight from the land — and not only by the self-employed workers — is coming to an end. We then noted that non-agricultural employment — whether of dependent workers or self-employed ones — presents a relatively regular growth in the long run, which presupposes a “dynamic transfer” between industry and the services. It may be assumed that this tendency, which is observable in Italy, also takes place in other economies.

From the analysis carried out in this study, it is clear that, in order to fight unemployment, we have to act mainly in two directions: 1) to slow down the expulsion of dependent workers in the large industrial corporations, an expulsion which, in some countries, has risen to substantial proportions; and 2) strengthen the growth of medium and small firms industry and the services.

If the main objectives are two in number, the interventions to be examined number three. Some of these interventions have been recommended by various economists and from time to time tried out by several industrialized countries. Nowadays, the problem is how to integrate them in an organic strategy, assigning to each intervention the role which appears necessary in an overall approach. In a brief comment, I shall try to highlight those interventions which, on the basis of the above analysis, seem particularly important. The first type of intervention aims at speeding up economic growth. No one doubts that this could facilitate the reabsorption of unemployment. Interventions of the second and third type, though not running counter to the process of growth (indeed they rather facilitate it), aim at increasing the intensity of the use of labour by respecting the constraints of profitability and competitiveness which we discussed above.

Here, in schematic form, are the three types of interventions.

I. Interventions designed to drive up the rate of growth of income:

1) Actions coordinated at the world level to reform the international monetary system, and to vigorously speed up the development of Third World countries.

2) Development policy for applied research in order, in particular, to encourage those "autonomous" innovations which introduce new goods for end consumption and which can create jobs.

3) Reduction of the rate of interest, mainly by reducing the public sector deficit.

4) General and specific public works.

5) Non-market activities (environment, artistic patrimony, assistance to the Third World).

II. Interventions designed to increase the flexibility of the labour market:

1) Mobility within firms; arrangements for hiring and dismissing workers both in the private and in the public sector.

2) Working hours (part time, flexible hours, reduction of normal hours in individual branches of activity).

3) Labour costs (reform of welfare contributions, temporary subsidies to hirings, measures to encourage profit sharing).

III. Interventions designed to sustain the growth of small firms and of self-employed workers:

1) Industrial areas and specific services for industrial firms.

2) Nurseries for small firms.

I shall confine myself to some brief remarks on the question of the external mobility of workers, the reform of welfare costs and nurseries for small firms.

There appears to be some justice in the conviction that, in postwar years, more constraints have been introduced in the labor market in Europe than in the United States, Canada and Japan. Some writers have spoken of Eurosclerosis, and contrasted the growth of employment in these three countries with the disappointing record of most European countries. There is some truth in this thesis. However, if we set aside the special case of Japan, the comparison between the European countries and the United States on the other may be unfavourable to the former as regards employment, but is favourable to them as regards productivity. In this respect, we ought rather to speak of American sclerosis. There has recently been an extensive debate in the United States on the slowdown in productivity growth. We have already seen that these two phenomena are linked and that rigidity factors have not only negative consequences. However, in this field, too, there is an optimum. And if it is admitted that unemployment, especially among the young, is a serious social evil which cannot be counterbalanced either by a more rapid increase in productivity or by the greater security enjoyed by those already with or able to obtain a job, then we must correct the politician approach and amend social legislation. After recognizing that this legislation in the period of the fat kine has been overgenerous with guarantees in all or almost all European countries, there is a case for thinking about holding a conference, a European one to be precise, in order to compare the different experiences and identify the adjustments to be introduced (cf. Guizzi, 1986). What is in question is the reform of the Welfare State; for political and ideological reasons, such a reform meets with much more serious difficulties if the initiative is taken in individual European countries than if it were a European initiative. On the other hand, if changes in the Welfare State are introduced piecemeal, they are likely to be ill-conceived and wasteful. The problem must be tacked resolutely in the interests of the new generations.

Welfare costs by firms come under the heading of labour costs in the same way as earnings, even if dependent workers are only concerned about the latter item. These days we are discussing the reform of the tax system, with particular emphasis on direct taxes. In this perspective, we have to consider the desirability of giving up the irregular bouts of "fiscalization" (*i.e.* transfers of burdens from industry to the State) and prepare a plan for the gradual and irreversible fiscalization of welfare costs, even if we have to place heavier taxes on profits, at least on those not reinvested. The wage question is linked with that of profit-sharing. Although we should not expect extraordinary effects, this formula, which was vigorously put forward by Weitzman (1984), deserves serious study. In large concerns in certain branches, it could produce positive results.

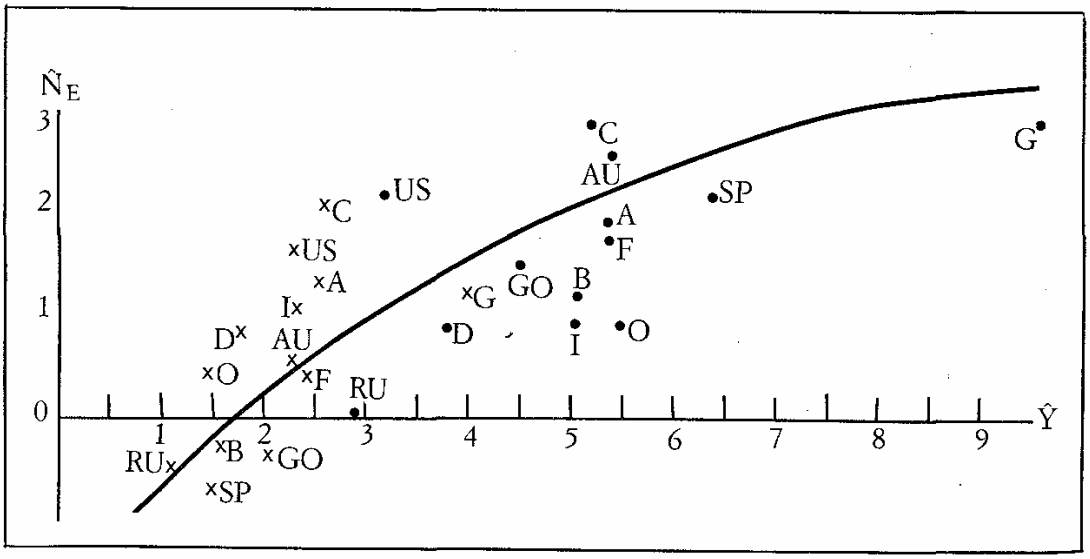
In order to encourage the formation and growth of small firms, various steps have been taken: the creation of industrial areas, and of fully equipped buildings, outright grants, credit and tax concessions, legal and technical assistance. Perhaps one might go further and form nurseries for small firms in big firms, whether public or private, and in adequately organized management schools. Such an initiative would be of particular importance in areas where there is a lack of entrepreneurship, such as the South of Italy.

Roma

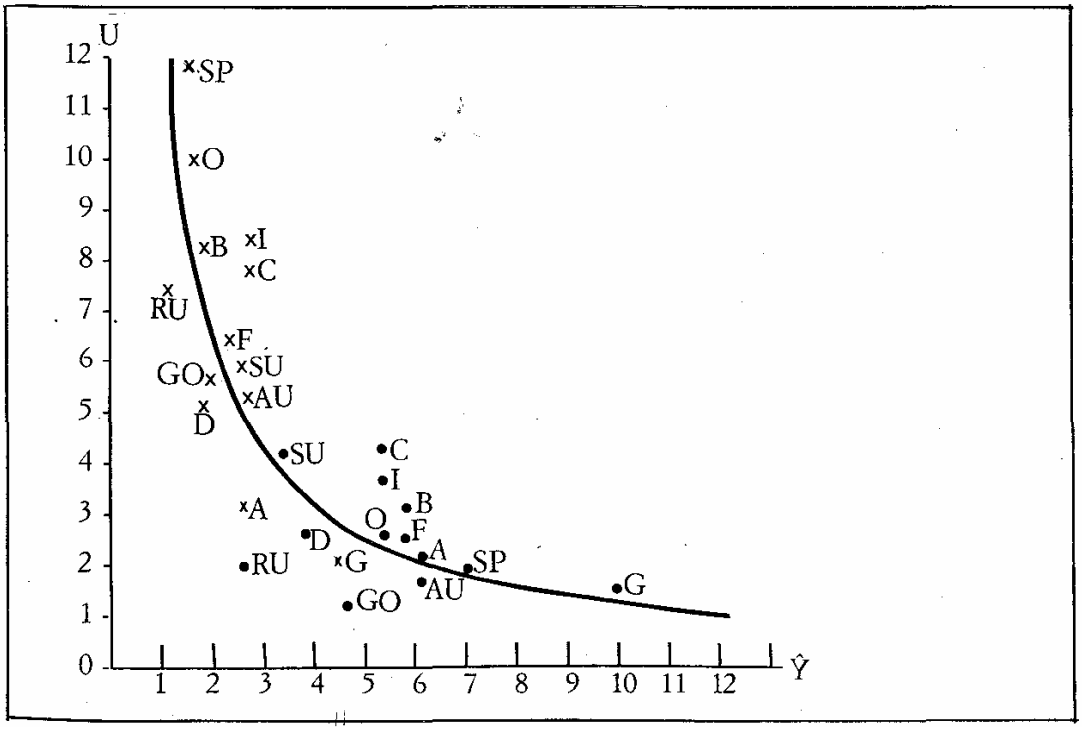
PAOLO SYLOS LABINI

1. The preliminary hypotheses: two graphs

(a) *Income and non -agricultural employment: two periods, 13 countries* (average annual rates of change) (•66-73 x 73-85)



The dots and crosses link the average annual rates of change in non-agricultural income and employment in 13 countries for the two multiyear periods indicated in the text (1966-73: sustained expansion; and 1973-84: slowdown in the process of growth). In the graph, the curve, based on an arbitrary estimate (the aim is purely illustrative), corresponds to the equation:



(b) *Income and unemployment in the two periods, 13 countries* (. 66-73 x 73-85)

The dots and crosses link the average annual rates of change in income and the average rate of unemployment between the two end years of the periods in question. This curve, too, is estimated arbitrarily, and is an equilateral hyperbole described by the equation

$$U = 12/\hat{Y}$$

	Non-agric. employment (average a. rates of change 66-73	73-85	Income 66-73	Δ% 73-85	Unemployment 73-85	Δ% averages	Female labour f. Δ% 73-85	Empl. in man. ind. 73-85
Australia (AU)	2.6	0.7	5.6	2.4	5.6	5.1	34	−19.8
Austria (A)	2.0	1.5	5.5	2.5	3.6	3.0	12	−11.0
Belgium	1.2	−0.2	5.2	1.7	10.6	8.2	18.8	−30.9
Denmark	1.0	0.9	3.9	1.7	8.4	5.1	19	−12.6
France	1.9	0.5	5.5	2.3	7.4	6.3	20	−15.3
W. Germany	1.4	−0.3	4.6	2.0	7.1	5.3	10.7	−16.0
Italy	1.2	1.3	5.2	2.3	4.8	8.3	27	−16.9
Holland	0.7	0.5	5.5	1.6	13.1	9.9	52	−14.7
United Kingdom	0	−0.4	2.8	1.1	9.2	7.3	19	−28.0
Spain	2.6	−1.3	6.4	1.6	17.0	12.2	24	−26.9
Canada	2.9	2.0	5.2	2.5	4.9	7.9	57	+ 2.8
Japan	2.8	1.1	9.8	4.3	1.3	2.0	15.6	+ 0.7
United States	2.3	1.7	3.2	2.3	2.2	6.0	46.8	− 1.0

Sources: All data except for those regarding income are from the Yearbook of Labour Statistics, INTERNATIONAL LABOUR OFFICE, Geneva, 1973, 1983, 1986. Income: World Development Report, THE WORLD BANK, 1986.

ITALY

	U_1	$\hat{N}_{Ed}$	U_2	$\hat{Y}$	$\hat{FLF}$
1961	1.5	3.8	1.6	8.2	1.0
1962	1.6	2.4	1.6	6.2	−2.3
1963	1.3	2.4	1.3	5.6	−4.9
1964	1.5	1.1	1.4	2.8	−2.4
1965	2.3	−3.1	1.5	3.3	−2.0
1966	2.2	−0.9	1.9	5.9	−3.0
1967	1.8	2.6	1.8	7.2	0.2
1968	2.1	1.7	1.6	6.5	1.6
1969	1.5	3.1	2.3	6.1	0
1970	1.3	2.4	2.4	5.3	0
1971	1.7	0.1	2.2	1.6	0.1
1972	1.8	−0.3	2.8	3.2	−1.1
1973	1.4	1.4	2.5	6.8	3.6
1974	1.2	2.2	2.4	4.1	1.6
1975	2.0	0.2	2.6	−3.6	2.4
1976	1.8	0.6	2.8	5.9	4.5
1977	1.5	0.6	3.1	1.9	5.3
1978	1.7	0.4	3.7	2.7	0.7
1979	1.8	1.8	3.9	4.9	3.7
1980	1.6	1.1	4.2	3.9	2.8
1981	2.3	0.4	4.4	1.1	2.3
1982	2.8	−0.2	5.1	0.2	1.0
1983	3.2	−1.1	5.4	0.5	2.6
1984	3.9	−0.6	5.1	3.5	1.6
1985	3.6	−1.3	5.2	2.6	1.6
1986	3.5	0	5.5	2.7	3.6

Sources: Annuario delle statistiche del lavoro, ISTAT, for various years and Relazione generale sulla situazione economica del paese, MINISTERO PER IL BILANCIO, various years. The two series for unemployment are expressed as percentages of the labour force.

2. The estimated equations for the Italian economy

Almost all the equations presented in this appendix were estimated by Dr. Mirella Damiani, research worker at Perugia University. Dr. Damiani saw to the collection of the data and in several cases gave me a number of usefu1 suggestions for the specification of the equations.

Except in a few instances, the variables are expressed in terms of rates of change. As readers know, this procedure makes it possible to avoid various difficulties in interpretation (including many connected with multicollinearity). At the same time, the coefficients may prove worthy of consideration even if they assume relatively low values (for example, 0.40 or 0.50), values which would be of fairly little interest were the variables expressed in terms of levels or logarithms. I must warn readers that the rate of change is indicated by a cap over a variable, that beneath each coefficient the value of Student's t is shown, and that the R2 have been adjusted for the degrees of freedom.

The period considered as a rule extends from 1960 to 1984 or 1985, and we refer to this period when no indications to the contrary are given. In some cases, however, we have examined two subperiods, since 1973 represents a break in the evolution of most of the variables. In assessing the estimates of the equations for the two subperiods, we must bear in mind that the number of the data is lower than the one normally regarded as the minimum.

(a) *The fundamental determinants of unemployment*

Here is the estimate of equation (3) (see text):

$$\text{(1A)}\quad \Delta U = \underset{4,57}{10,47} + \underset{2,42}{0,06}\,\Delta FLF - \underset{4,30}{3,08}\,\hat{N}_E - \underset{1,92}{1,73}\,\hat{Y} \qquad R^2=0,80 \quad DW=2,35$$

where we consider the percentage changes in unemployment and in the female labour force and the average rates of change in non-agricultural employment and in income in 13 countries for the period 1973-75. (It should be noted that income, though it is significant, is less so than the other variables: this should not cause surprise since the rates of change in income and non-agricultural employment are to a certain degree correlated.)

For Italy, in addition to total unemployment, we have considered two of the three categories of unemployment (it is, as we have seen, doubtful whether persons in the third category should be included in the figures for the unemployed): *i.e.* persons who have lost their job (U_1) and those seeking work for the first time (U_2) .I have used the changes, in percentage points, in the ratio of unemployment and the rates of change of income, of the female labour force , and bf dependent non-agricultural employment: the latter variable has proved to be more significant than the total non-agricultural employment (both these three equations and the one for the 13 countries were estimated by Professor Paolo Palazzi:

$$\text{(2A)}\quad \hat{U}_T = \underset{4,76}{7,11} + \underset{2,52}{1,17}\,\widehat{FLP} - \underset{6,68}{5,16}\,\hat{N}_{Ed} \qquad R^2=0,68 \quad DW=2,25$$

$$\text{(2AA)}\quad \hat{U}_1 = \underset{4,57}{13,23} - \underset{1,80}{0,98}\,\hat{Y}_i - \underset{5,09}{8,48}\,\hat{N}_{Ed} \qquad R^2=0,69 \quad DW=2,13$$

$$\text{(2AAA)}\quad \hat{U}_2 = \underset{4,90}{8,17} - \underset{1,89}{0,97}\,\widehat{FLF} - \underset{7,29}{6,23}\,\hat{N}_{Ed} \qquad R^2=0,70 \quad DW=2,21$$

In equation (2A) concerning total unemployment, income has not proved to be significant, clearly because in this case the correlation between this variable and non-agricultural dependent employment is particularly close. The changes in income -more specifically in industrial income - appear to be significant only in the case of unemployment in the narrow sense.

In order to clarify the nature of the impulses causing the changes in non-agricultural employment, and in particular in manufacturing industry, we should begin with the equation for labour productivity in manufacturing measured in terms of hours:

$$(3A)\quad \hat{\pi} = \underset{4,69}{0,34}\,\hat{Y}_i + \underset{3,22}{0,15}\,(\hat{L}-\hat{P})_{-1} + \underset{3,19}{0,47}\,(\hat{W}-\hat{P}_{ma})_{2\cdot3} \qquad R^2 = 0,80;\ DW = 1,93$$

We have made several estimates of this equation, corresponding to equation (7) in the text. In the one presented here, which is the most satisfactory, the constant k is not statistically significant and has been omitted, whereas in other estimates it is significant. These ambivalent results should not surprise us, since, in an equation where all the variables are expressed in terms of rates of change, we can assume that k represents productivity increases due to autonomous innovations, which, by their very nature, do no act continuously. (I should warn readers that the third explicative variable represents the average of the values for two or three years earlier.)

From the productivity equation we obtain the equation for dependent employment in industry measured in terms of persons (see text, equation 7a):

$$(3AA)\quad \hat{N}_{id} = \underset{2,51}{0,18}\,\hat{Y}_i - \underset{3,16}{0,14}\,(\hat{L}/\hat{P})_{-1} - \underset{2,13}{0,24}\,(\hat{W}/\hat{P}_{ma})_{-3} \qquad R^2=0,34;\ DW=1,50$$

The estimate does not seem very satisfactory. It becomes so if, instead of dependent employment in industry, we use the one for all non-agricultural sectors; the improvement, as Professor Momigliano has observed to me, should probably be linked to the hypothesis of dynamic transfer:

$$(3AAA)\quad \hat{N}_{Ed} = \underset{3,40}{0,21}\,\hat{Y}_i - \underset{2,79}{0,14}\,(\hat{W}/\hat{P})_{-1} + \underset{2,65}{0,23}\,(\hat{W}/\hat{P}_{ma})_{-3} \qquad R^2=0,61;\ DW=2,01$$

From the equation for non-agricultural employment, we can obtain the one for unemployment in the narrow sense (see text, equation 8):

$$(4A)\quad \hat{U}_1 = \underset{4,81}{-2,92}\,\hat{Y}_i + \underset{3,03}{1,20}\,(\hat{L}/\hat{P})_{-1} + \underset{3,45}{2,59}\,(\hat{W}/\hat{P}_{ma})_{-3} \qquad R^2=0,51;\ DW=1,72$$

This is the second approximation equation for unemployment in the narrow sense. Let us see whether this equation can help us to explain total unemployment:

$$(5A)\quad \hat{U} = \underset{4,05}{-1,36}\,\hat{Y}_i + \underset{2,30}{0,68}\,(\hat{L}/\hat{P})_{-1} + \underset{4,34}{1,45}\,(\hat{W}/\hat{P}_{ma})_{-3} \qquad R^2 = 0,45;\ DW = 1,63$$

The interpretational effectiveness declines as might be expected, but is still considerable (it should be remembered that all the variables -including the one regarding unemployment- are expressed in terms of rates of changes). When we look at overall unemployment, however, we must include in the explicative variables the labour force as well, and, in particular, for the reasons recalled in the text, the female labour force. The equation for overall unemployment then becomes:

$$(6A)\quad \hat{U} = \underset{2,23}{1,30}\,\hat{FLF} - \underset{4,10}{1,28}\,\hat{Y}_i + \underset{2,68}{0,64}\,(\hat{L}-\hat{P})_{-1} + \underset{4,14}{1,25}\,(\hat{W}-\hat{P}_{ma})_{-3} \qquad R^2=0,61;\ DW=1,86$$

Clearly, the interpretational effectiveness of this equation in which the female labour force is included, is considerably greater than the one in which this is not shown.

In order to verify the hypothesis that the real rate of interest also affects productivity (see section 5), we estimated a variant of equation (3A). Here are the results:

$$(3B)\quad \hat{\pi} = \underset{12,12}{0,61}\,\hat{Y}_i + \underset{2,01}{0,05}\,(\hat{L}-\hat{P})_{-1} + \underset{3,25}{0,29}\,(\hat{W}-\hat{P}_{ma})_{-2\cdot3} + \underset{5,00}{0,12}\,(i-\hat{P}) \qquad R^2=0,98;\ DW=2,11$$

This variant covers only the period 1974-84. The marked increase in real interest took place in these years.

(b) Unemployment in the United States and in Canada

Ashenfelter and Card (1985) have noted that, although the economies of these two countries are very similar, which up till 1981 was reflected in the unemployment rates, in recent years the

.differences in these rates have on. the contrary become marked. The two Princeton economists examine various explicative hypotheses, but do not succeed in explaining these differences.

I have had equations of type 5A estimated for these two countries. Here are the results for Canada:

$$(7A)\qquad \hat{U} = \underset{1,89}{-1,68}\ \hat{Y} + \underset{1,36}{0,53}\ (\hat{L}-\hat{P}) + \underset{4,79}{2,26}\ (\hat{W}-\hat{P}_{ma})_{-2} \qquad R^2=0,65;\ DW=1,46$$

The estimate is for the period 1969-85. Since the data for the prices of machines before 1976 are not homogeneous, I have had the equation estimated for the period 1976-85, too, though realizing that the period is too short. Here are the results:

$$(7AA)\qquad \hat{U} = \underset{4,46}{-2,15}\ \hat{Y} + \underset{4,35}{1,51}\ (\hat{L}-\hat{P}) + \underset{8,91}{1,88}\ (\hat{W}-\hat{P}_{ma})_{-2} \qquad R^2=0,96;\ DW=1,55$$

And here are the results for the USA:

$$(8A)\qquad \hat{U} = \underset{5,42}{23,33} \underset{6,93}{-5,62}\ \hat{Y} + \underset{2,06}{0,97}\ (\hat{L}-\hat{P}) + \underset{1,39}{1,15}\ (\hat{W}-\hat{P}_{ma})_{-2} \qquad R^2=0,80;\ DW=1,77$$

The results are satisfactory and encourage us to go on with this type of analysis. The data should be reviewed and the changes in the female labour forces should be included among the explanatory variables. (It should be noted that, in the article of the two economists cited, unemployment is expressed in percentage rates, while here it is shown in rates of change.)

From an examination of the evolution of the explanatory variables it appears obvious that the explanation of the differences in the years 1982-3-4 is mainly due to the evolution of the difference W-P_{ma} variable which incorporate the stimulus to the relative saving of labour. In any case, the problem deserves to be looked into carefully, not only and not so much because of the specific query set out above as in order to test the interpretational effectiveness of two alternative approaches: that presented here and that of the two authors, which is strictly neoclassical.

(c) Wage determinants

In the previous equations regarding unemployment, we have assumed that the impulse making for changes stems from wages: unemployment is the passive variable, and, as we have argued, in this case the relation between wages and unemployment is direct. On the contrary, this relation is inverse when the impulse stems from unemployment. This is precisely the Phillips-Lipsey equation, of which we present two estimates:

$$(9A)\qquad \hat{W} = \underset{3,86}{31,03}\ U_T^{-1} + \underset{9,08}{0,98}\ \hat{V} + \underset{4,33}{8,65}\ D70 \qquad R^2=0,93;\ DW=1,80$$

$$(10A)\qquad \hat{W} = \underset{3,80}{6,58} - \underset{2,01}{0,10}\ U_T + \underset{6,99}{0,90}\ \hat{V} + \underset{4,13}{8,50}\ D70 \qquad R^2=0,77;\ DW=1,66$$

For equations of type 9A, in which we use the reciprocal of the unemployment rate, the results are just as good for the three categories of unemployed considered separately. For the equations of type 10A, in which we use the rate of change of unemployment, the results are good in the case of the first category, not so good in the second, and decidedly poorish in the third. V is the cost of living index and D70, a dummy referred to 1970, a year which felt the full weight of the effects of the "hot" summer of 1969.

(d) The determinants of employment In three sectors of activity

Agriculture

Total agricultural employment (N_a)

(11A) (60-85) $\hat{N}_a = -0{,}53\ \hat{Y} - 0{,}92\ \hat{N}_{is}$ $R^2=0{,}54$
2,82 1,56 $DW=1{,}86$

(12A) (60-73) $\hat{N}_a = -0{,}73\ \hat{Y} - 0{,}24\ \hat{N}_{is}$ $R^2=0{,}73$
4,32 0,43 $DW=2{,}37$

(13A) (74-85) $\hat{N}_a = +0{,}85\ \hat{Y} - 5{,}71\ \hat{N}_{is}$ $R^2=0{,}73$
3,07 5,21 $DW=2{,}05$

where Y is the GNP at constant prices and N_{is} is total employment in industry and private services. It should be noted that, in the most recent period equation 13A -Y becomes positive, a sign that agricultural employment is exhausting its role as a reservoir a labour for other activities. For this role was played mainly by self-employed workers (see graph A-4), rather than dependent ones (N ad), which often are employed by modern capitalist firms and which, during the whole period, vary directly with changes in GNP:

(14A) (60-85) $\hat{N}_{ad} = +0{,}54\ \hat{Y}$ $R^2=0{,}38$
2,47 $DW=2{,}43$

Industry: dependent employment measured in terms of total hours worked

Equation 7a in the text for industrial employment was estimated with decidedly positive results. The estimate refers to the period 1960-84. Employment is measured in hours and only covers dependent workers:

(15A) $\hat{N}_{idh} = 0{,}64\ \hat{Y}_i - 0{,}14\ (\hat{L}-\hat{P})_{-1} - 0{,}45\ (\hat{W}-\hat{P}_{ma})_{2\cdot3}$ $R^2=0{,}82$
9,39 3,21 3,22 $DW=1{,}98$

From this relation we can obtain the equation for productivity on the basis of the relation $\pi = Y/N_{idh}$, which can be approximated by the difference $\pi = Y_i - N_{idh}$ on several occasions, I have used differences between rates of change rather than rates of change in the ratios: for relatively low values of the variables, the differences are minimal). It should be borne in mind that in the equation for N_{ih} the coefficient of Yi must be the complement to 1 of the coefficient Yi in equation 3A. The nexus between dependent employment measured in terms of hours and dependent employed measured in terms of persons may expressed by the relation:

(15AA) $\hat{N}_{idh} = 0{,}25\ \hat{N}_{id}$ $R^2=0{,}37$
3,94 $DW=2{,}09$

(cf. also equations 3AA and 3AAA).

Non-agricultural activities excluding the civil service

On the basis of the observations in section 2 of the text, we might expect to find that: the changes in dependent unemployment and total unemployment in non-agricultural activities (excluding the civil service) may be explained by the same factors as those which help to explain the change in dependent employment in industry alone; and (2) that the changes in total employment in the services are negatively correlated with total employment in industry (the "dynamic transfer" hypothesis). Both hypotheses seem to be empirically confirmed, as may be gathered from equation (16A) dependent employment in industry and private-sector services, N_{isd}, from equation (17A) (total employment in industry and private-sector services, N_{is}) and from equation (18A) (employment in private-sector services, N_s , which is placed in relation to total employment in industry, with a time lag of a year):

$$(16A)\quad \hat{N}_{isd} = \underset{4,68}{0,40}\ \hat{Y} - \underset{2,31}{0,06}\ (\hat{L}-\hat{P})_{-1} - \underset{2,33}{0,14}\ (\hat{W}-\hat{P}_{ma})_{-3} \qquad R^2=0,47;\ DW=1,61$$

$$(17A)\quad \hat{N}_{is} = \underset{1,59}{0,74} + \underset{3,48}{0,26}\ \hat{Y} - \underset{2,15}{0,06}\ (\hat{L}-\hat{P})_{-1} - \underset{2,43}{0,14}\ (\hat{W}-\hat{P}_{ma})_{-3} \qquad R^2=0,38;\ DW=1,88$$

$$(18A)\quad \hat{N}_{s} = \underset{17,31}{2,41} - \underset{5,79}{0,59}\ \hat{N}_{i-1} \qquad R^2=0,79;\ DW=2,16$$

(The specification of equation 18A was suggested by Dr. Damiani; the estimate covers the period 1974-85.)

It must be pointed out that in equations (15A) (dependent employment in industry in terms of hours), (16A) (dependent employment in industry and market services) and (17 A) (total employment in the same sectors), correlations gradually become less close, as may easily be understood, since the explicative variables are the same, but the variable explained represents a larger and larger aggregate.

(e) The wages-profits-Investment sequence

I shall confine myself to presenting the estimate of the equations which have an important role in the wages-profits-investment sequence; these are equations which appear in the reference model (appendix, § 3).

Wages have a negative influence on investment when they increase more than productivity, since in that case they usually depress the rate of profit (see text, section 10). At the same time, wages exert a positive effect through the increase in dependent labour income and in consumption and the resultant fall in unused capacity. A sustained increase in wages may create pressure for a restrictive economic policy if that increase drives up imports more than exports.

Here, to start with, is the investment equation:

$$(19A)\quad \hat{I} = \underset{1,99}{17,61} - \underset{8,64}{2,69}\ UC + \underset{2,56}{0,95}\ (G/K-i) + \underset{3,11}{12,41}\ D66 \qquad R^2=0,85;\ DW=1,94$$

The determinants of investment (with reference to manufacturing industry) are the degree of unused capacity (*UC*) and the difference between the rate of profit and that of interest. We have included a dummy for 1966 since, for reasons of general economic policy, investment by firms of State controlled corporations was vigorously boosted. An increase in interest rates hampers investment in two ways: it depresses net profits and prompts managers to make financial investments rather than real ones. For these two reasons, it seems preferable to consider the two rates as a single variable, using the difference, rather than take them separately. (Not only in Italy, but in most developed countries, the high rate of interest has hampered investment, and, in particular, investment which could increase employment. In its turn, the high rate of interest is largely attributable to the economic policy followed by the United States and the marked increase in the supply of public bonds caused by the huge budget deficits of that country.)

And here are the equations for income from dependent labour, consumption, imports and exports:

$$(20A)\quad R\hat{L}D = \underset{4,32}{4,15} + \underset{12,32}{0,73}\ \hat{W} + \underset{2,83}{0,75}\ \hat{N}_d \qquad R^2=0,88;\ DW=1,87$$

where N_d indicates total dependent employment.

$$(21A)\quad \hat{C} = \underset{21,58}{0,73}\ R\hat{L}D + \underset{7,07}{0,25}\ R\hat{N}G \qquad R^2=0,99;\ DW=1,95$$

where RNG is the income of self-employed workers.

$$(22A)\quad \hat{IM} = \underset{7,05}{1,54}\,\hat{C} + \underset{4,60}{0,36}\,\hat{I} - \underset{3,57}{0,40}\,(\hat{P}_{im}-\hat{P}) + \underset{2,93}{12,78}\,D76 \qquad R^2=0,88;\ DW=2,13$$

where P_{im} are import prices, Pare domestic prices and *D76* a dummy expressing the extraordinary, even if brief, recovery of income and imports after the decline in 1975.

$$(23A)\quad \hat{E} = \underset{12,29}{1,71}\,\hat{DM} - \underset{2,39}{0,59}\,\hat{P}_{esp} + \underset{3,04}{0,05}\,UC - \underset{4,54}{16,00}\,D73 \qquad R^2=0,90;\ DW=2,05$$

where DM is world demand, expressed by the index of world manufacturing production, P_{esp} export prices adjusted for the dollar exchange rate, and D73 a dummy which expresses the braking effect of the increase (an abnormally rapid one for those days) of export prices.

3. A short-term reference model

Equations

1M) Investment	$\hat{I}$	$= -a_1UC+b_1(G/K-i)$
2M) Prices	$\hat{P}$	$= a_2\hat{L}+b_2\hat{MP}+c_2\hat{P}_{int}$
3M) Rate of profit	G/K	$= a_3\hat{P}-b_3\hat{L}-c_3\hat{MP}-d_3UC$
4M) Unused capacity	UC	$= -a_4\hat{C}-b_4\hat{I}-c_4\hat{E}$
5M) Consumption (current prices)	$\hat{C}$	$= a_5\hat{W}-b_5\hat{U}$
6M) Productivity per hour	$\hat{\pi}$	$= a_6\hat{Y}+b_6(\hat{L}-\hat{P})_{-t}+c_6(\hat{W}-\hat{P}_{ma})_{-t}$
7M) Unemployment	$\hat{U}$	$= -a_7\hat{Y}+b_7(\hat{L}-\hat{P})+c_7(\hat{W}-\hat{P}_{ma})_{-t'}$
8M) Wages	$\hat{W}$	$= a_8-b_8\hat{U}+c_8\hat{V}$
9M) Imports	$\hat{IM}$	$= a_9\hat{C}+b_9\hat{I}-c_9(\hat{P}_{int}-\hat{P})$
10M) Exports	$\hat{E}$	$= a_{10}\hat{DM}+b_{10}(\hat{P}_{int}-\hat{P})+c_{10}UC$

Identities

11M) Cost of living	$\hat{V}$	$\equiv a_{11}+b_{11}\hat{P}$
12M) Price of machines	$\hat{P}_{ma}$	$\equiv a_{12}+b_{12}\hat{P}$
13M) Consumption (constant prices)	$\hat{C}_c$	$\equiv a_{13}+b_{13}\hat{C}-c_{13}\hat{P}$
14M) National income	$\hat{Y}$	$\equiv a_{14}\hat{C}+b_{14}\hat{I}$

In the construction of the model, the basic hypothesis is that the fundamental dynamic impulses flow from manufacturing industry. Hence, investment, the rate of profit (expressed as a ratio of total profits to the value of capital), prices, unused capacity, hourly productivity and wages refer to manufacturing industry. World demand (DM in equation 10M) is expressed by the index of world manufacturing output (UN data). Exports mostly consist of industrial products, while imports also include raw materials and sources of energy.

There are 10 endogenous variables, as in the case of the equations. The exogenous ones number four: MP (prices of raw materials on international markets), P_{int} (international prices of finished products), DM (world demand), and i (rate of interest). The cap over a variable indicates a rate of change.

4. The slowdown in the process of growth

As o»e of the causes of the recent trend of unemployment, I have mentioned, without trying to explain it, the slowdown in the process of growth. Among the several factors at the root of such a

slowdown, I would include the marked instability in international monetary relations following the abandonment of the system instituted by the Bretton Woods agreements and the extraordinary rise in the real rate of interest, which has reached levels almost unique in the history of capitalist countries. Considerable light has been thrown on this question by Fitoussi and Phelps in an article on Western European countries (1986). Partly on the basis of their analysis and partly of my own observations, I present, in a severely compressed form, the following sequences:

United States

1) T ax cuts + public expenditures ↑ = public deficit ↑
2) Public deficit ↑ supply of bonds ↑ at ↑ interest rates
3) Tight money → interest rates ↑
4) Interest rates ↑ inflow of capital from Japan and European countries, where the interest rates were pushed up (in certain countries such a rise was accentuated by rising public deficits)
5) Inflow of foreign capital → appreciation of the dollar (up to 1985) → rate of increase of exports ↓ foreign deficit ↑
6) Public deficit ↑ demand for home produced and foreign goods ↑ trade deficit ↑

Europe

7) Interest Rates↑
Overflow of capital → US } production of capital goods ↓ investment ↓

8) Interest rates ↑ { real prices of capital goods ↓
mark-up over costs ↑

9) Dollar appreciation (up to 1985) → 7 increasing competitiveness of European firms *vis-à-vis* US firms → 7 mark-up over costs ↑
10) Mark-up over costs ↑ areas of profitable investment ↓

The slowdown of investment (7, 10) is at the origin of the slowdown in the process of growth. The fall in the real prices of capital goods, coupled with the increase in money wages, has helped to curb the expansion of employment (cf. sect. 6, equation 7 a in the text) .The adverse effect on investment of an increase in the rate of interest can be seen in equation 1M of the previous section.

5. The employment and oil consumption equations

The equation for employment in non-agricultural sectors, which is of type:

$$\hat{N}_{Ed} = a + b\,\hat{Y} - c(\hat{L}-\hat{P}) - d(\hat{W}-\hat{P}_{ma})_{-t},$$

is completely analogous to an equation which can explain changes in oil consumption:

$$\hat{C}_{pe} = a + b\,\hat{Y} - c(\hat{P}_{pe}-\hat{P}) - d(\hat{P}_{pe}-\hat{P}_{ca})_{-t}$$

where P_{pe} is the price of oil, P is the wholesale price index, and P_{ca} is the price of coal, the most direct substitute for oil. The second explicative variable expresses the drive towards "absolute saving", the third being the drive towards "relative saving". I estimated an equation of this kind several years ago; then I published this estimate in an article which carne out in the review Dimensione energia (1985, no. 9). Here is a more recent estimate referring to the period 1960-85:

$$\hat{C}_{pe} = \underset{2,15}{-2,60} + \underset{6,50}{1,80}\,\hat{Y} - \underset{2,32}{0,42}\,(P_{pe}\hat{/}P) - \underset{1,78}{0,40}\,(P_{pe}\hat{/}P_{ca})_{-6} \qquad \begin{matrix} R^2=0,72 \\ DW=1,71 \end{matrix}$$

6. Employment and unemployment: the young

If the general picture for employment and unemployment shows marked differences, that part of the picture covering the young is especially so. It would seem that among the values which are declining among the youngest, we may include the stability of the job and the level of earnings, once an income has been achieved capable of satisfying the basic needs. Values on the way up, on the contrary, are the ones affecting satisfaction - direct pleasure and ideal or intellectual satisfaction - obtainable from work, and, corresponding to the smaller importance attached to stability, the variety, over time, of experience, especially in the field of part-time work (including seasonal activities). For the rest, the rising average family income due to the rising productivity of labour is creating growing scope for the most varied professions or trades, many of them of a purely consumerist type.

In addition to situations which are, at bottom, physiological, however, there are, specially in the South of Italy, profoundly unhealthy ones.

7. Prospects for employment in Italy

In the unemployment table for the developed countries, Italy ranks high, but is not near the top. The Italian average is around 12%. A serious level is found in the South: 16%; in the North the level is around 8%, that is, it is above, but not much above, the figure for what is now regarded as that for frictional unemployment. The fact is that, during the last 15 years, unemployment in the South has grown faster than in the North, but, contrary to the general belief, employment, too, has grown faster: 0.7% a year on an average as against 0.4%. To a large extent, this evolution may be attributed to the growth in the supply of female labour, which we mentioned above, but in part it is due to the growth in population.

It should be noted that in the South the fall in employment in manufacturing has been much less pronounced than in the North and Centre. This is quite understandable, given the relatively smaller role played by the larger firms.

In Italy, the guarantees afforded to those in employment have been decidedly strengthened by the workers' statute approved by law in 1970. From the point of view of social progress, this was a measure deserving approval. But today it ought to be revised. It should be recalled that, in Spain, after the introduction in 1980 of a law on the same lines as the Italian one, it underwent significant modifications four years after. The guarantees provided for those in employment have accentuated certain rigidities in the labour market, especially as regards hirings and firings, and have also promoted the decentralization of units of production in the form of satellites of large firms, and the extremely rapid (probably too rapid) growth of tiny firms, which rarely become medium sized (or large) firms, since the entrepreneurs stop short of the critical threshold, beyond which the constraints referred to come into play, especially those regarding hirings and firings.[10]

The question is of some importance since the Italian economy suffers from the insufficient growth of medium-sized firms in many fields, with negative results of many kinds, some of which affect the spread of technological innovations (cf. Onida, 1987, p. 24 of the typed manuscript).

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[10] The critical threshold is that of 50 workers. It might be worth thinking of an experiment measure allowing employers to raise it to, for example, 100, in agreement with the trade unions, for a limited but sufficiently long period, say 5 years, and 'with guarantees for both sides. If the experiment were a success, the temporary measure might be replaced by a definitive one.

Moreover, the whole system of guarantees has led many large firms to subcontract various jobs, thus contributing to the excessive proliferation of very small firms.

The phenomenon of the growth of small firms has therefore a number of conflicting aspects, both positive and negative. It would seem certain that the algebraic sum is positive, if only because it is the small firms in industry which have helped stem the fall in total employment. According to the study by F. Barca (1987, p. 28 and figure 3), in relatively small firms -employing from 20 to 99 persons -which were covered by a survey used by him from 1973 to 1986, employment increased by 20%, while in the relatively large firms -with 200 workers and over- it fell during the same period by 30% .In a word, the problem is to remove the obstacles to the growth of small firms if conditions are favourable.

It should be noted that the guarantees protecting workers already in employment have aggravated the rigidities in the labour market in the very period when, in order to avoid an increase in unemployment, stress was laid on increasing the flexibility of the units of production, not only because of the slowing down of growth and the increase in the supply of labour, but also because of the changes in the structures of production in the developed countries. For the new technologies tend to afford more scope for economies of specialization and differentiation than for economies of scale. And a similar trend has been stimulated by the marked and persistent increase in individual income which leads to a growing differentiation in demand.

In Italy, what we have to do is to prepare a strategy which makes use of all the measures considered in the last section of the essay and in particular puts in hand the revision of the workers' statute, the reform of the system of welfare costs (including the indemnity for dismissal) and the creation of nurseries for firms.

To illustrate the paint, I give below two forecasting hypotheses for 1992, the year in which European economic integration is to be completed. The first hypothesis can be fitted into current trends. The second one (which is a high hypothesis) presupposes vigorous and organic State interventions beginning with steps to speed up the process of growth. In working out these "reasoned extrapolations", I have tried to take account of the preceding theoretical analysis and of the empirical tests. However they are very rough extrapolations. Both for this reason and in order not to draw this essay out too much, I have omitted the reasoning behind these extrapolations. I confine myself to presenting below the graphs illustrating the evolution of the main categories of people employed (male or female, dependent or self-employed), distinguishing between the main sectors of activity.

Table a)

EMPLOYMENT, UNEMPLOYMENT AND LABOUR FORCE

	Agri-culture	Industry	Other activities	Total	Labour forces	Unemployment
1978	3.07	7.58 (7.43)	9.37	20.02 (19.87)	21.58	7.2% (7.9%)
1986	2.24	6.82 (6.52)	11.80	20.86 (20.56)	23.47	11.1% (12.4%)
1992 l.	1.74	6.34	13.62	21.70	24.40	11.0%
h.	1.82	7.00	13.84	22.66	24.70	8.3%

Table b)

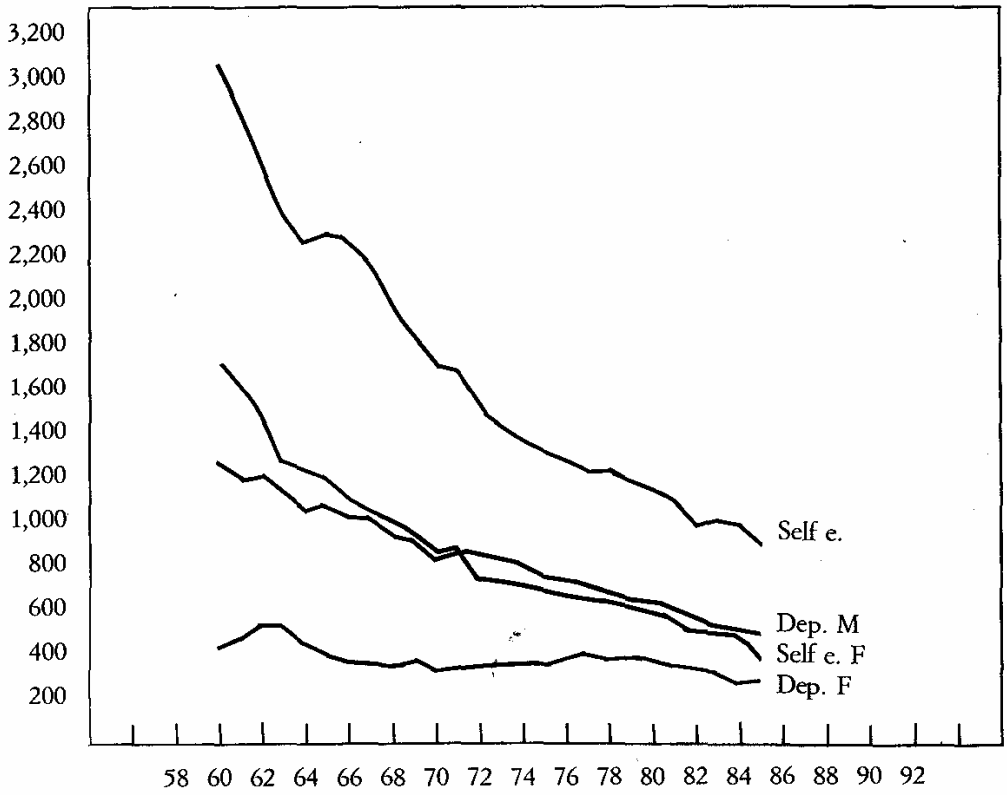
A VERAGE ANNUAL CHANGES
(in thousands)

	Agriculture	Industry	Other activities	Total	Yearly rate of increase
1978-86	−104	−95 (−114)	304	105 (86)	0.5%
1986-92 l.	− 83	−80	303	140	0.7%
h.	− 70	+30	340	300	1.4%

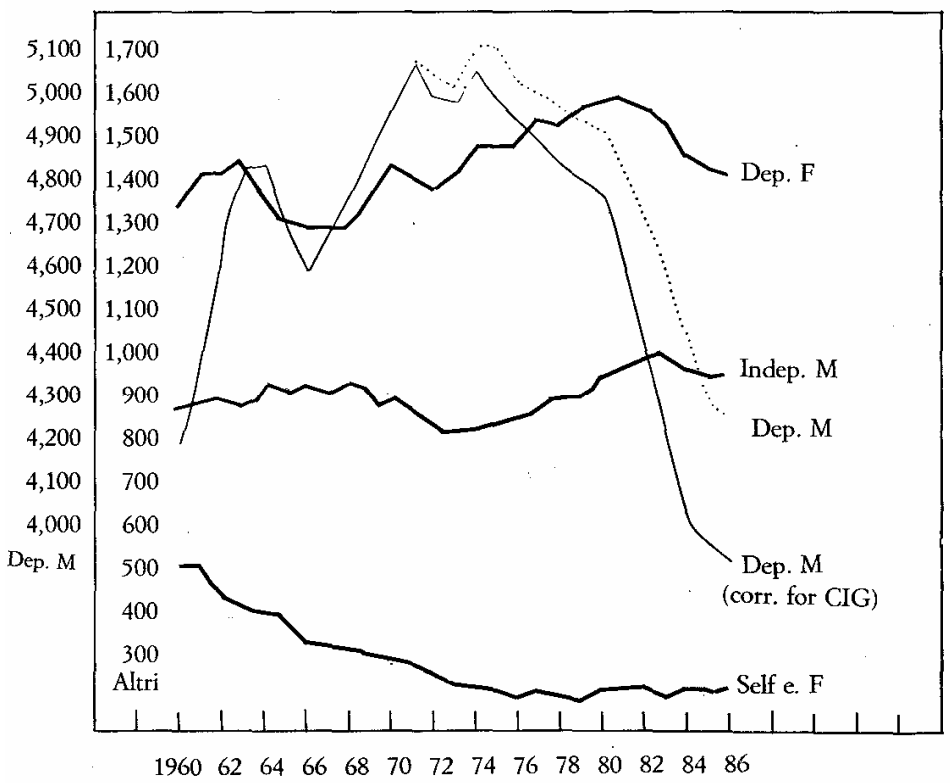
In table a) the figures in the first five columns are in millions. The figures in brackets are not of workers in the "Cassa integrazione guadagni". The low hypothesis is shown as 1 and the high one as h.

Source: ISTAT.

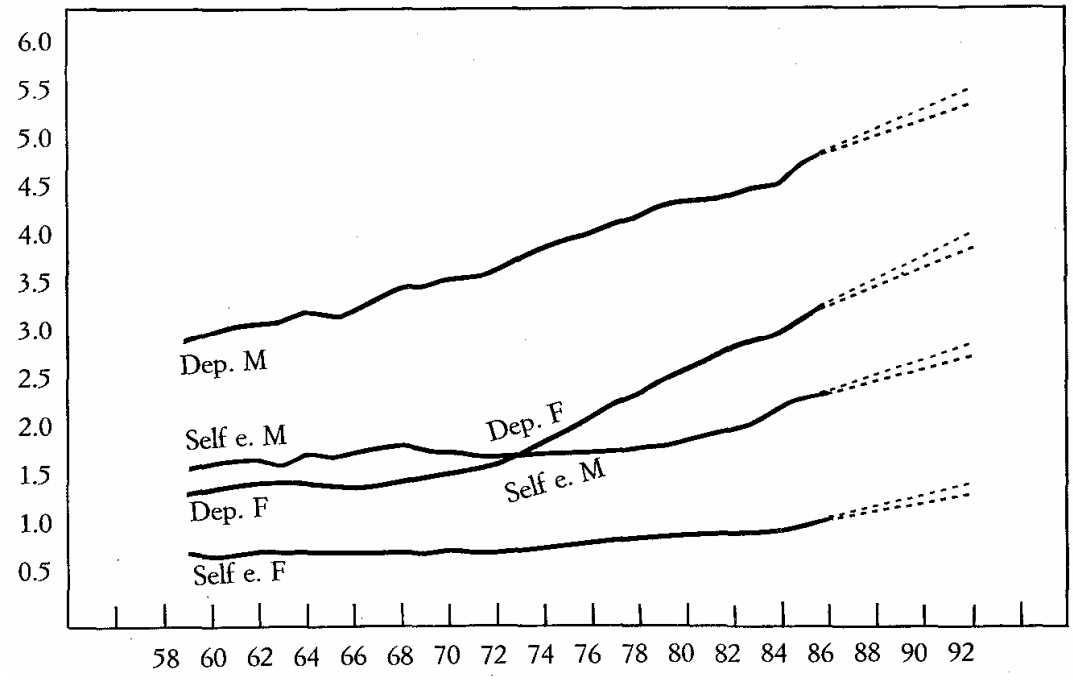
A-1
AGRICULTURE: DEPENDENT AND SELF-EMPLOYED WORKERS, MALE AND FEMALE (000)



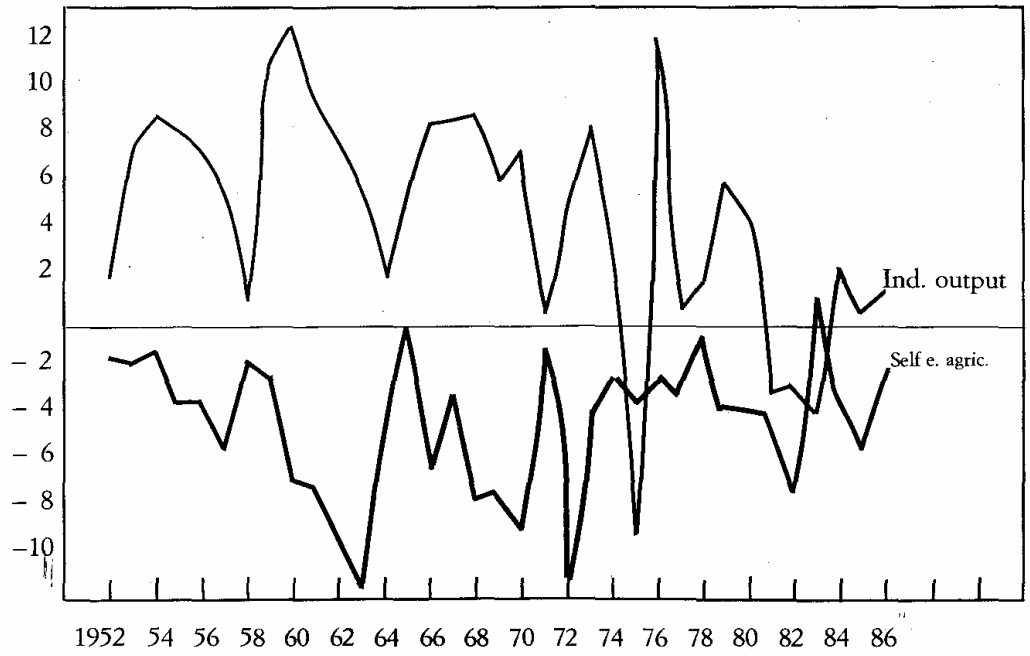
A-2
INDUSTRY: DEPENDENT AND SELF-EMPLOYED WORKERS, MALE AND FEMALE (000)



A-3
SERVICES, DEPENDENT AND SELF-EMPLOYED WORKERS, MALE AND FEMALE (millions)

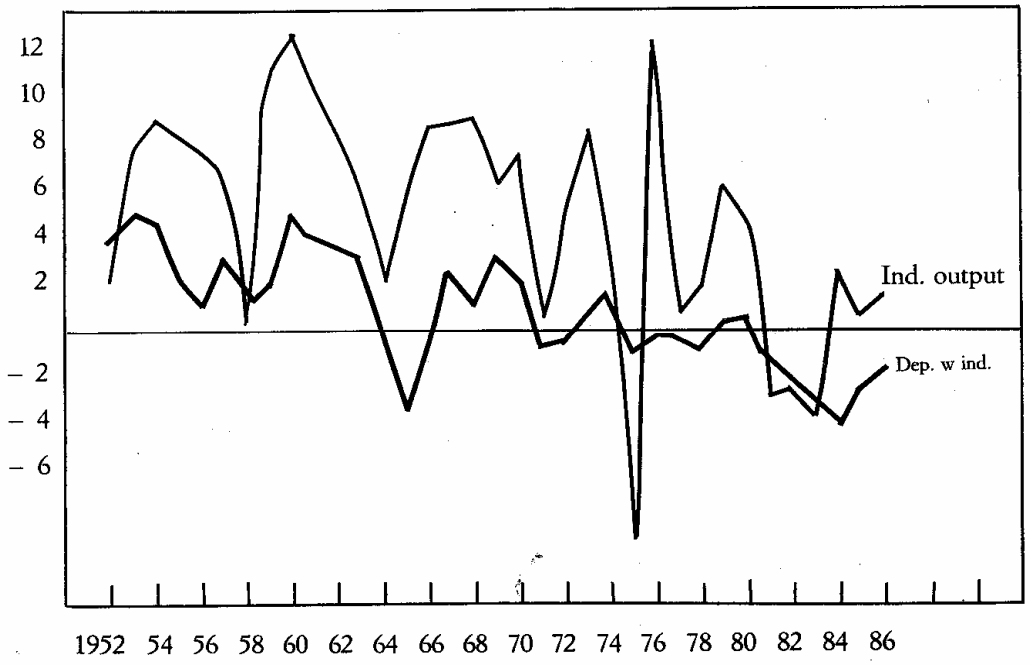


A-4
AGRICULTURE: SELF-EMPLOYED WORKERS, MALE AND FEMALE (rates of change)



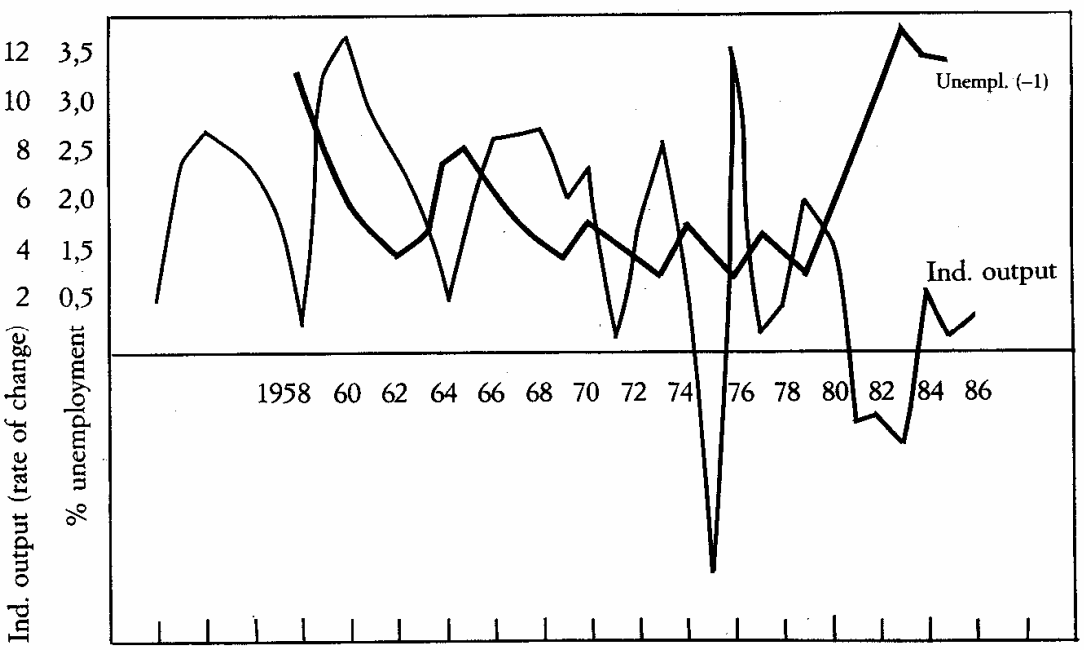
A.5

INDUSTRY: DEPENDENT WORKERS, MALE AND FEMALE (rates of change)



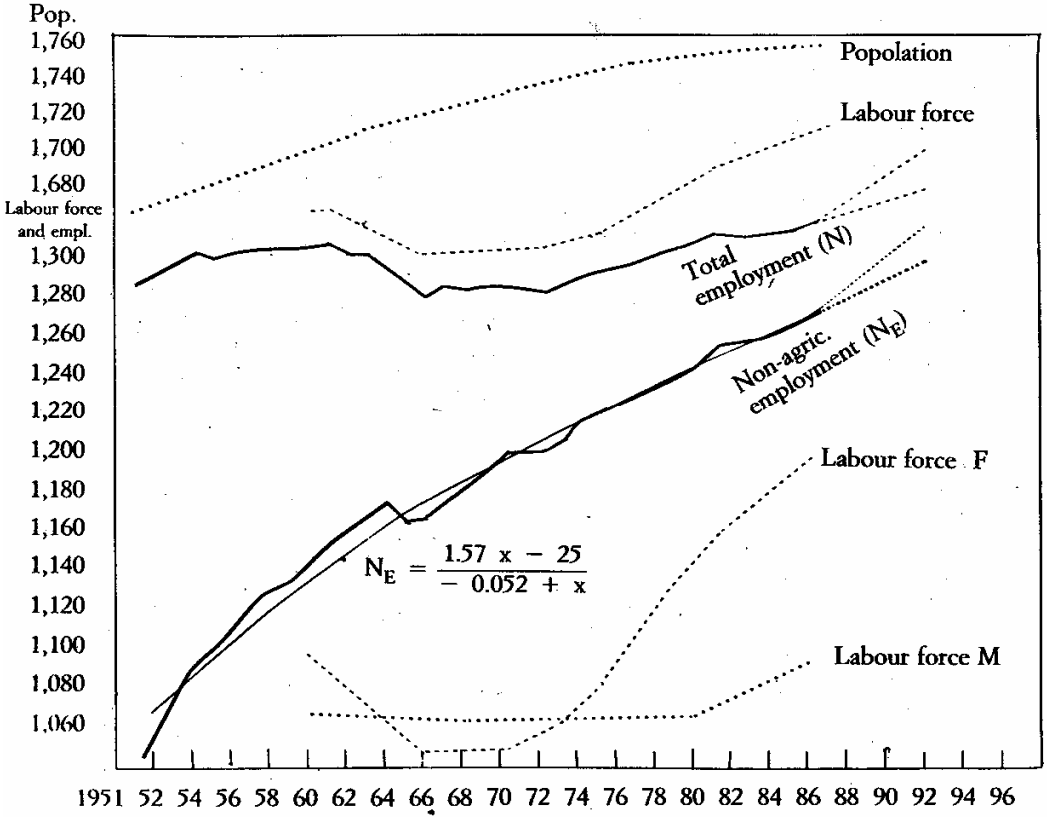
A.6

RATE OF UNEMPLOYMENT IN TRE NARROW SENSE (lagged 1 year)
AND RATE OF CHANGE OF INDUSTRIAL OUTPUT



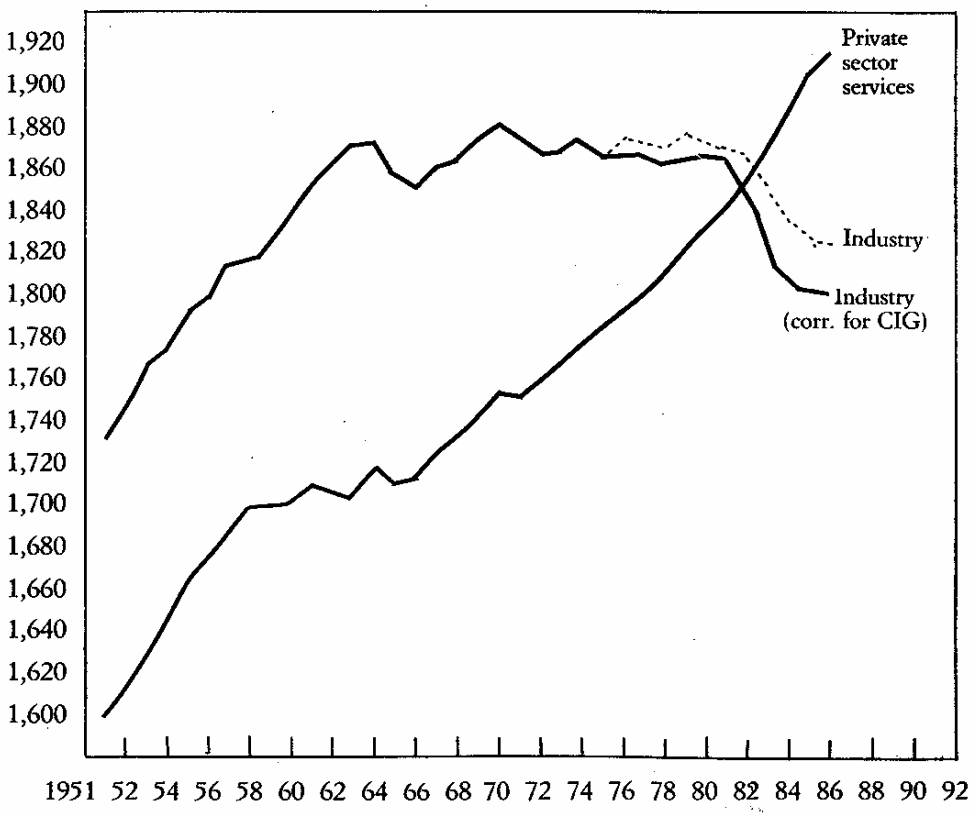
A.7

POPULATION, LABOUR FORCE AND EMPLOYMENT (log)



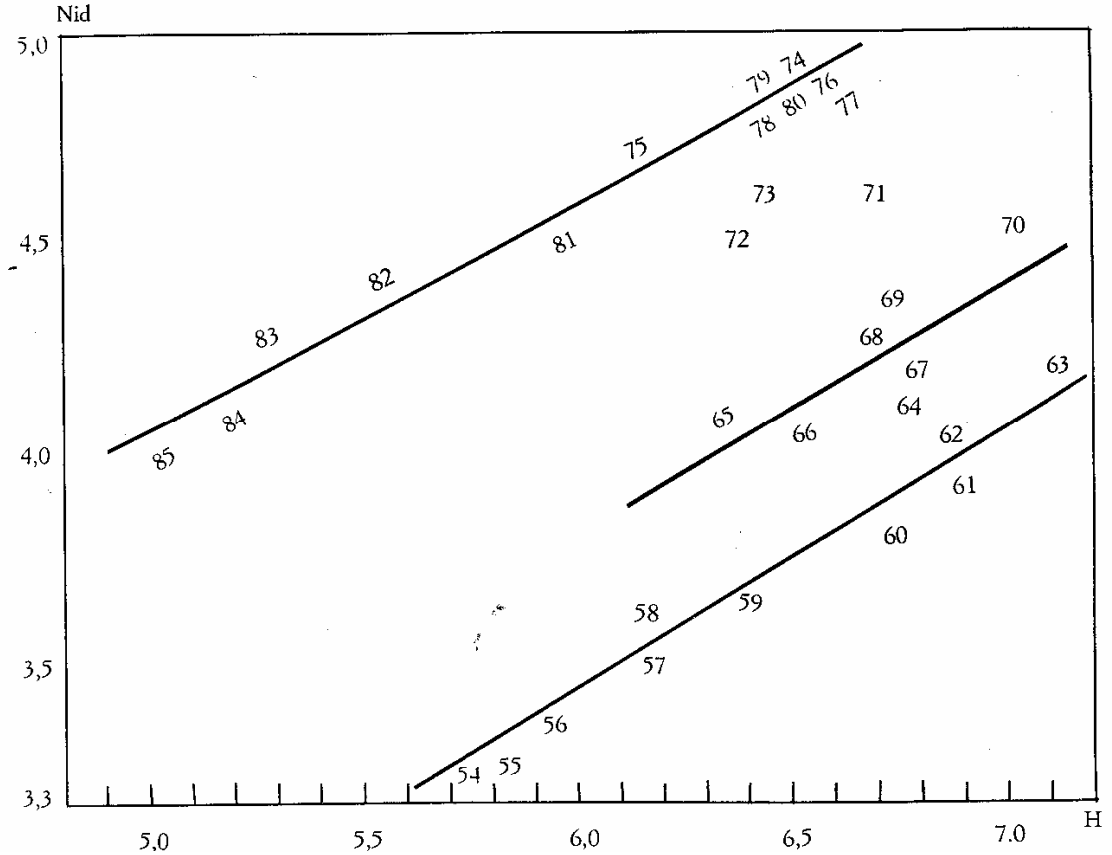
A.8

EMPLOYMENT IN INDUSTRY AND PRIVATE.SECTOR SERVICES (log)



A-9

MANUFACTURING INDUSTRY: TOTAL HOURS WORKED PER YEAR (H) AND DEPENDENT WORKERS (N_{id})



Note: This is a graph which I had elaborated several] years ago and which I have now brought up to date. Paola Potestio and Paolo Piacentini had used it in an article of theirs in 1978 ("Some observations on the relation between working hours and employment", Note economiche, 1978 no.

4). Professor Potestio reverted to the question in a recent article, which appeared in the Rivista di politica economica (1985, no.12).

The graph shows clearly, in line with the points put forward in the text, that any "leap" from one function to the other should be put in relation to a cyclical dip: 1964, 1974-75, and 1981. It should also be noted that 1971, when there was a dip, was followed by a rebound, a vigorous one, but soon interrupted by the first oil shock. Hence, the three years 1971, 1972 and 1973 must be regarded as a transitional period. In the graph, they remain outside any function.

We must bear firmly in mind that the data, by their very nature, are highly uncertain. As sources for this and for other graphs, I have used the Annuario italiano di statistica and the Annuario delle statistiche del lavoro of ISTAT for various years. (Total hours are in billions, workers in millions.)

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In 1986 the Italian Ministry of Labour has presented a plan to speed up the increase in employment and, recently, a report concerning this fundamental problem. Cf. G. DE MICHELIS, *Il piano del lavoro*, Rome-Bari, Laterza, 1986 and *Rapporto '87 - Lavoro e politiche dell'occupazione in Italia*, Rome, CENTRO EUROPA RICERCHE and FONDAZIONE GIACOMO BRODOLINI, 1987.

Lastly, I recommend to read the 14 essays (all of them of excellent quality) in the supplement of *Economica* cited above. The essays are devoted to the problem of the increase in unemployment in most of the developed countries.