Proceedings of the British Academy, LXXIII, 1987, 237–258

KEYNES LECTURE IN ECONOMICS

INDUSTRIAL CHANGE AND UNEMPLOYMENT

By G. D. N. WORSWICK
Fellow of the Academy

Read 5 November 1987

Introduction

AVERAGE unemployment in the United Kingdom in the 1960s was well under half a million; in the 1970s just under a million; and in the 1980s so far, well over 2½ million? These are averages of the official figures. Some observers believe that they overstate the number of our fellow citizens about whom we should feel concern, but a greater number believe that they understate the size of the problem. I shall evade this important, but intricate area, by putting the question I wish to address this afternoon with deliberate imprecision. What has happened to make three million unemployed, give or take half a million, the norm for Britain today?

There are different approaches to a question of this kind. In macro-economic explanations—whether Keynesian or new classical—we deal with aggregates—total employment and unemployment, national output and expenditure, the general level of wages and prices, and so on. In what one might call the structuralist approach, we start from the heterogeneity of the components of demand and supply. Workers are employed in particular occupations, in particular industries, in particular places, and there is a corresponding differentiation of demand. If there is a change in the pattern of demand, the pattern of industries will adapt to the change: the same will happen if new products or new processes of production are introduced. Disequilibria will emerge in various markets: in particular, shortages of labour will appear in some sectors and surpluses in others. For the gaps to close again, workers displaced from declining firms or industries must first find where the new jobs are appearing. They may need retraining, or to move their homes, processes which take time, during which workers may be unemployed. The structuralist approach attempts to identify the different kinds of

imbalance or mismatch which can occur, between occupations, between industries and between locations.

What I have called the macro-economic and the structuralist explanations of unemployment are different, but they are not mutually exclusive.

I will begin this lecture with a brief sketch of the trends in employment and unemployment in Britain since the First World War—mainly as a reminder, but partly because there are one or two surprises—at least I was surprised. Then I will report on some attempts which have been made statistically to separate demand deficiency unemployment from structural unemployment. It turns out that these attempts, while interesting, are not conclusive. So I try a new tack, and examine directly one or two of the 'structural' candidates. The first of these is the suggestion that at the root of our problem is the acceleration of technical change brought about in the 'new industrial revolution', based on micro-electronics. This seems pretty obvious, but it turns out on closer inspection that the facts do not seem to square with the theory.

So I try two other industrial changes, one a long-term trend and the other of more recent origin. I conclude that these changes can be said in some degree to have contributed to the rise in unemployment, but mainly because of an unfortunate coincidence in timing with the switch in the target of demand management from maintaining employment to containing inflation. My provisional conclusion will be therefore that the main culprit has been demand, and that the contributions from structural change have been minor by comparison. Nevertheless, it does not follow that we could get back to full employment simply by reversing the thrust of the engines of demand management. There may be structural obstacles in the way. There will be time only for the consideration of one of these obstacles, and I conclude the lecture with a brief look at the present and prospective regional distribution of jobs.

Long-term trends in working population, employment and unemployment

The upper line in Fig. 1(b) represents the UK working population since 1921, and the lower line the 'employed labour force', which includes, besides all those in paid employment, the self-employed and HM Forces. The difference between the two lines, which has been shaded in, is unemployment (excluding school leavers). This is plotted separately at the top (a), to show its

FIG. 1. Working population, employed labour force and unemployment in the UK, 1921–86. See Statistical Appendix (p. 257).

movements more clearly. The figures are from Feinstein and *Economic Trends*.[1]

Both working population and the employed labour force rose between the wars. The high unemployment of the 1920s and the even higher rates of the Depression in the 1930s are apparent. In the Second World War the working population reached 25 million, and was fully stretched. After demobilization, the upward trend of the working population was resumed, but at a slower rate than before, and with periods of decline, notably between 1966 and 1972. With unemployment very low—between 1 and 2 per cent in the 1950s and 1960s—employment followed working population very closely. It reached a sharp peak in 1966, and since then the upward trend seems to have disappeared. The contribution of rising unemployment is apparent.

[1] C. H. Feinstein, *National Income, Expenditure and Output of the United Kingdom, 1855–1965* (CUP, 1972), and *Economic Trends, Supplement*, 1987. The two series are joined at 1950, where there appeared to be little difference between them.

Distinguishing between 'demand deficiency' and 'structural' unemployment

Is it possible to distinguish changes in unemployment which are caused by the ups and downs of demand, from changes brought about by structural factors?

One such method is *UV* analysis—*U* for unemployment, *V* for (unfilled) vacancies. During the 1950s and 1960s it was observed that there seemed to be a good statistical relationship between *U* and *V*. When pairs of observations of *U* and *V* were plotted, they traced out a curve, convex to the origin. The relationship appeared to become less clear in the late 1960s, but that suggested the idea that it might be possible to distinguish between movements along a *UV* curve, and bodily shifts of the whole curve, using the amount of the shift as an indication of structural unemployment.

Let me try to set out the essential theory as simply as I can. We start with the idea that the methods of production do not change, the only thing which alters being the level of total demand, which rises and falls. There are *L* workers, all alike, and there is perfect information about jobs, and perfect mobility. Initially, there is no demand for labour, so that unfilled vacancies are zero, and unemployment $U = L$, the labour force. Now let the demand for labour, which is derived from the demand for goods, rise. As it does so, it creates vacancies, which are instantly filled. So unfilled vacancies, *V*, remains zero, but *U* falls as *D*, the demand for labour, rises. When *D* reaches *L*, unemployment will have fallen to zero, while *V*, unfilled vacancies, still stands at zero. But if *D* continues to rise beyond *L*, it will create unfilled vacancies, one for one; but now unemployment remains at zero. In other words, in this world of perfect information and mobility, when there is unemployment we have zero vacancies, and when there are unfilled vacancies, there is zero unemployment. The *UV* curve, tracing out pairs of observations, consists of the two axes of reference.

What happens if we introduce a little imperfection? Once more, as *D* rises from zero, *U* will fall, one for one: but beyond a certain point the imperfection begins to tell, and as *D* rises by one, unemployment will fall by less than one, by $(1 - s)$, say, leaving an unfilled vacancy of s. (The story might appear more realistic if we dealt in hundreds or thousands of workers, so that we would not have an unfilled vacancy of a fraction of a worker. But the algebra is simpler if we put realism aside!) As *D* continues to rise, the frictions or imperfections get a bit stronger, so that the

reduction of unemployment gets less and less, and the fraction, s, of unfilled vacancies increases. This time, when D becomes as big as L, the labour force, there still remains some unemployment, and there will be an equal amount of unfilled vacancies. If we push D beyond L, there will be further reductions of unemployment, but more and more of the extra demand will turn up in unfilled vacancies, until a point is reached when all the workers are in employment, and U has fallen to zero. If D rises further still, it will now turn up, one for one, in additional unfilled vacancies. In this new example, the UV curve, plotting pairs of observations, no longer consists just of the axes of reference, but a curve lying between them, taking off from the x axis (unemployment) at the point where friction appears, and striking the y (vacancies) axis at the point where all workers have found jobs, and unemployment has disappeared.

If we have two economies A and B (Fig. 2), each with the same sized labour force, and the UV curve of economy A stays above that of economy B throughout its length, we would have little hesitation in saying that the labour market in economy A is less perfect than in B. But what if the curves were to cross? How could we then compare the degree of labour market imperfection in the two economies? The best answer is to compare them where $U = V$. That is to say, we draw a 45 degree straight line from the origin, and the higher of the two UV curves cutting this line denotes the economy with the greater market imperfection. The reason for choosing the points where unemployment and vacancies are equal, is that they represent the points of zero demand deficiency. If someone is still unemployed at the point where

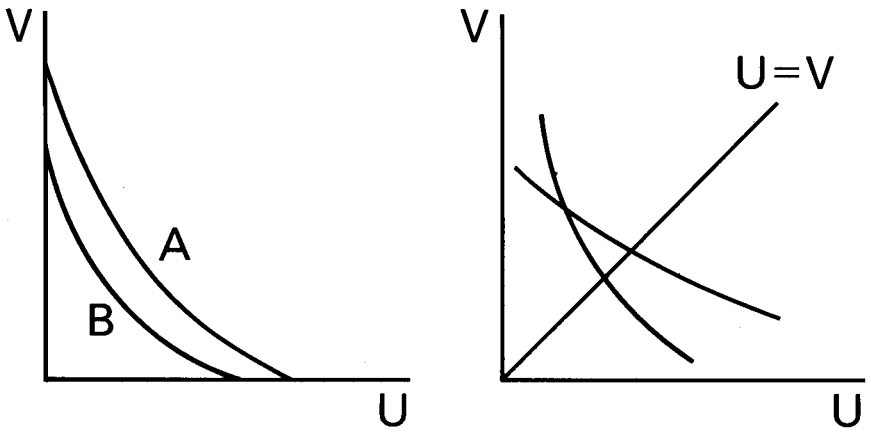

FIG. 2. U = unemployment; V = (unfilled) vacancies.

$U = V$, it must be because: 1, he has not yet found a vacancy in his own trade which exists (frictional); 2, he is in the wrong place to accept a suitable vacancy (locational); 3, there is a vacancy, but it is in another industry or occupation (structural). One can make shorter or longer lists of the specific mismatches which prevent a particular vacancy being filled immediately by a particular worker, but the essential aspect of all these types of unemployment is that they are ascribable to market imperfection and not to any excess of numerical supply over numerical demand for labour. It also seems reasonable to characterize the level of unemployment where $U = V$ as corresponding to 'full employment', since it can be argued that if unemployment were greater than this, there must be deficiency of demand.

In any practical use of this model to distinguish demand deficiency unemployment from other types, there is the question whether the recorded statistics of unemployment and unfilled vacancies correspond to their 'true' counterparts. There are good reasons for querying this in Britain, especially as regards vacancies, but to pursue this question would take us too far afield. In fairness I should add that those economists who use this method are well aware of the problem.

The analysis which I have just described can be used to compare different economies at the same date, or the same economy at different dates. It was extensively developed by Arthur Brown and his colleagues when they were studying the regional economics of the United Kingdom at the end of the 1960s.[2] The analysis supported the important conclusion that the main reason for differences in unemployment in different regions of the United Kingdom arose from differences in the pressure of demand for labour, and not differences in the experience and quality of the supply. More recently, in his study of world inflation, published two years ago, Brown has applied the analysis to compare different economies at different dates.[3] *UV* charts were provided for USA, UK, Japan, Germany, and France, covering a period from the mid-1950s to the 1980s. Using the $U = V$ criterion of full employment, corrected where necessary for divergence between recorded and 'true' values, the conclusion was that there has been little change in labour market

[2] A. J. Brown, *The Framework of Regional Economics in the United Kingdom* (CUP, 1972). See also the chapter on 'UV Analysis' by A. J. Brown in G. D. N. Worswick (ed.), *The Concept and Measurement of Involuntary Unemployment* (Allen & Unwin, 1974).

[3] A. J. Brown, *World Inflation since 1950* (CUP, 1985).

imperfection in Germany and Japan (less than ½ of 1 per cent), whereas in USA, UK, and France, market imperfection could account for rises of the order of 2 per cent in the 'full employment' level of unemployment. In Britain, much of the rise up to 1976 could be put down to this, and an increased propensity to register, but most of the rise since 1979 was attributable to demand deficiency. It is tempting to link the rise up to 1976 with industrial change, but there could have been other causes. For instance, Brown himself has suggested that in the years of persistent labour shortage after the war, employers got into the habit of hoarding labour in downturns, in anticipation of rapid recovery. If, as appeared to be the case in 1966, they believe that a normal recovery is not on the way, they may shed labour. This may well have happened again after 1979. Reserves of labour hitherto held inside the firm are 'externalized', and in such a case the *UV* curve would shift upwards.

An alternative approach starts from the proposition that structural unemployment exists when there is a mismatch between vacant jobs and unemployed workers, such that, if the latter were available with different skills, or in different places, the unemployment would fall. The idea then is to calculate the number of workers in the wrong industries, or in the wrong places in this sense. Layard and Nickell[4] provided such indices of mismatch by occupation, industry, and region for Britain, and more recently Jackman and Roper[5] have calculated additional indices for Britain and extended the study to a number of other countries as well. Their conclusion for Britain was '. . . that there has not been much change in structural imbalance over the past twenty years, with the exception of a sharp increase in industrial imbalance after 1979'. This last increase could have been the result either of the exceptional severity of the recession, or of an increase in the underlying rate of structural change. Unfortunately, the statistical series which might help to distinguish between these hypotheses were discontinued in 1982!

There are some differences between Brown's results and those of Jackman and Roper. The former sees a significant part of the rise before 1976 in labour market imperfection, but the latter's tables show no sign of this. Brown attributes virtually all the rise after 1979 to demand deficiency, while Jackman and Roper

[4] P. R. G. Layard and S. J. Nickell, 'Unemployment in Britain' in C. R. Bean, Layard and Nickell (eds.), *The Rise in Unemployment* (Basil Blackwell, 1987).

[5] R. Jackman and S. Roper, 'Structural Unemployment', *Oxford Bulletin of Economics and Statistics*, xlix, No. 1 (February, 1987), 9–36.

think structural change might have contributed. Where both sets of results agree is that most of the rise between the early 1960s and the mid-1980s must have been due to demand deficiency. I have to admit that I find this last result congenial: it squares with the impression I had formed before I began work on this lecture. But I must also acknowledge—and this is no criticism of the authors I have cited—that the statistical evidence they provide cannot bear too much weight. In the *UV* analysis, for example, one is trying to distinguish between movements to and fro along a curve and bodily shifts of that curve, on the basis of a very few observations. And where market imperfection or structural factors are diagnosed, the methods do not point very clearly to what the precise changes are. So it seemed to me sensible to start again, this time looking directly at some industrial changes which common sense suggests might have been causing unemployment.

Technical change and unemployment

Many people believe that behind the rise in unemployment, not only in Britain, but in advanced countries generally, lies the speeding up of technical change, and they point to instances of astonishing savings in labour achieved by applications of the new micro-electronic technology. Economic theory does not rule out the possibility of lasting technological unemployment. If wages and prices of goods and services were perfectly flexible, then, in theory, the economy would always adjust towards full employment. But, if they are not perfectly flexible, there could well be circumstances in which unemployment would not dissolve. And even if there is a mechanism to take the economy back to full employment, the problem would be much the same if that adjustment worked only very slowly. For if there were an acceleration of technical progress, there might be an immediate increase in the number of workers displaced by new technologies, and it might be many years before the movement of relative prices and wages brought the economy back to full employment.

It is certainly widely believed that technical change has speeded up since the Second World War. There was a backlog of ideas and methods developed for war which could be adapted for peaceful purposes. Then there were spectacular advances in industrial chemistry, including the creation of a host of new materials.

Then came the new micro-electronic technologies, notably the computer, which have already begun to affect almost every form

of economic activity. All this would lead one to expect that productivity—output per person employed—would increase, possibly at an accelerating rate. And this is what we find in European economies. D. T. Jones (1976)[6] published figures for the annual average rate of increase in output per person employed, for the whole economy and for manufacturing, for the Big Five consisting of the original members of the European Community, as well as UK and Austria, for four successive periods of four or five years each, from 1955–60 to 1969–73. Not only was the *level* of the annual productivity growth rate higher than pre-war, but there was an acceleration for both total output and for manufacturing in the first three periods for the Big Five, as well as UK and Austria. The acceleration continued into the fourth period in the case of UK, but there is a slight dip for the Big Five. The United States had the same experience as regards the level of the average rate of increase of productivity at the beginning, but thereafter it showed a quite different profile of productivity growth up to the early 1970s. Denison (1985)[7] has made estimates of actual and potential national income per person employed, the latter a concept designed to remove cyclical changes. In the quinquennium 1948–53 both these measures of productivity growth were more than double the equivalent figures for 1929–41, but in the next two decades 1953–64 and 1964–73, both rates fell, although still remaining above the pre-war *levels*, and they went on falling in 1973–9, and again in 1979–82, when they were, in fact, negative.

From the early 1950s to the early 1970s unemployment in most European countries remained extremely low, by previous historical standards. In the United States, however, unemployment was not, on average, historically low. But these developments do not support the idea of accelerating technical change being a cause of high unemployment. At any rate, in those countries where productivity was accelerating, unemployment remained low, whereas, in the United States, the beginning of a rise in unemployment in the mid-1950s more or less coincided with the slowing down of productivity growth.

The big rises in unemployment in most countries occurred after 1973, and especially after 1979 or 1980. But we have already observed that the speed up of productivity growth had

[6] D. T. Jones, 'Output, Employment and Labour Productivity in Europe since 1955', *National Institute of Economic Review*, No. 77 (August, 1976), 72 ff.

[7] Edward F. Denison, *Trends in Anmerican Economic Growth, 1929–1982* (The Brookings Institution, Washington, 1985).

TABLE 1. *Real GDP per person employed (annual average percentage change)*

	1960–68	1968–73	1973–79	1979–85	1986	1987*
United States	2.6	1.0	0.0	1.1	0.2	½
Japan	8.8	7.3	2.9	3.0	1.3	1¼
Germany	4.2	4.1	2.9	1.6	1.8	1¼
France	4.9	4.7	2.8	1.4	2.5	1½
United Kingdom	2.7	3.0	1.3	1.8	1.7	2
Italy	6.3	4.9	1.7	1.0	1.9	3
Canada	2.6	2.5	1.3	1.0	−0.5	½
Total EEC	4.5	4.4	2.3	1.5	1.6	1½
Total OECD	4.1	3.4	1.5	1.6	1.0	1¼

Sources: OECD, *Historical Statistics, 1960–1985*, and *Economic Outlook* (June, 1987).
*Forecast.

begun to falter in a number of countries at the end of the 1960s, and after 1973 the trend in productivity growth was sharply lowered in virtually every advanced country. From then, until the end of the decade, the annual rate of increase was roughly halved, and this included the United States, where, as we have seen, the rate was already falling. Once again, the message of the data after 1973 is hostile to the argument that accelerating technical change has been the cause of unemployment. One could add that the most recent improvement in British productivity performance has been accompanied by falling unemployment, but it is a little early to see exactly what is happening.

I have been speaking as though technical change and labour productivity are virtually synonymous, and they are not. Economic theory would indicate that at least I should have been using 'total factor productivity'. The difficulty is a practical one, namely the lack of such estimates for many countries, over continuous periods. Here, I can only say that I have looked at a number of countries and periods where there are overlapping figures for the two productivity concepts, and have found that the relative movements of the two series in these cases are broadly similar. Even so, there are other things which could influence total factor productivity besides technical change. Denison,[8] who declared himself baffled by the scale of the productivity slowdown in the United States, consulted one of the great experts in technical change, Edwin Mansfield. He, and his colleagues, this was 1982, reported: 'Many of the available bits and scraps of data point to a slackening in the pace of innovation in the United

[8] Op. cit.

States. But the data are too crude and incomplete that it would be foolish to put too much weight on them.'

There is a well known association in the short period between output and productivity, but, putting that aside, my own view is that the main force raising productivity in the long run is technical advance, the essential transmission being investment in new equipment, accompanied by the complementary investment in human capital. Of course, adding to the stock of the existing kinds of equipment may raise labour productivity for a bit, but in the long haul the extra equipment will not help if it is not continuously embodying improvements and innovations. All in all, I am inclined to stick with my view that whatever is responsible for the rise in unemployment it is not technical change.

But there are other industrial changes which have been taking place, and I will look at two of them.

The shift to services and de-industrialization

First, there is de-industrialization. In advanced countries, so the argument runs, employment in service industries is bound to increase at the expense of employment in manufacturing. On the demand side, as real incomes rise, consumers spend an increasing proportion on services of all kinds, and, on the supply side, as a rule output per person employed rises faster in manufacturing than in services. Put these two propositions together and we see that a declining share of manufacturing in total employment is to be expected, and there is no need to agonize about a diminishing manufacturing base. Had the switch from goods to services been proceeding slowly over a long period, I would have been prepared to stop there, but in Britain's case it has not, and there is perhaps a bit more to be said. There was a fairly clear indication of the shift from manufacturing to services[9] in the inter-war years, but after the war the share of services fell back before resuming a slow upward trend. Meanwhile the share of manufacturing employment rose, from 32½ per cent pre-war to 35 per cent in 1950, and was to rise still further. This rise reflected the response of British industry to the need for higher exports to compensate for the depletion of overseas assets during the war. Thus, in 1970 the share of manufacturing in employment was no

[9] 'Services' are: Gas, electricity, and water; Transport and communications; Distributive trades; Insurance, banking, and finance; Miscellaneous services; National and local government.

lower than it had been fifty years earlier. It is since then that it has fallen so fast, from 36½ per cent in 1971 to 24½ per cent in 1986, services going up meanwhile from 53 to nearly 67 per cent. A change of share, as such, need not affect total unemployment but it may present problems if total employment is falling, and if the contracting industries are shedding full-time men on to the register and the growing industries are taking on part-time women from outside it.

A similar issue arises in the second industrial change I wish to look at, namely the arrival of North Sea oil. If employment is generated in a new activity, the share of all the others must fall. This, however, has not been a big factor with North Sea oil, which has a low ratio of employment to output. The big effect came indirectly, *via* the balance of payments. If you used to import a lot of oil, which now you no longer need to, the bill for total imports will fall, and so also can the exports required to pay for them. Manufactures are a major export, and could be expected to contribute to the switch. (Since we also import manufactures in a big way, it would be more proper to talk of net trade.) Whether the relative switch from manufactures to oil entails an absolute fall in manufacturing output depends on the context. If total national output remains constant, manufacturing would need to fall, for with non-oil imports unchanged, fewer exports would be required. But another way of greeting the arrival of North Sea oil would be to say that we can now afford more imports of other things besides oil, and the way to bring that about would be for national income to rise, sucking in more non-oil imports to replace the hitherto imported oil. It was unfortunate that the expansion of North Sea oil production overlapped with the rising tide of 'monetarist' policy. The whole thrust of demand management was diverted from maintaining employment to controlling inflation. Policy was strong enough not merely to stop GDP growth, but even to engineer a fall, and the contraction was reinforced as other countries followed with restrictive demand management. Thus the relative long-term adjustment from goods to services, and the shorter-term adjustment to North Sea oil, had to take place in the context of slowly growing, and, for a brief spell, falling GDP, which meant that there had to be an absolute fall in manufacturing. The mechanism to bring this about was, of course, the rise in the exchange rate, and the even greater decline in international competitiveness. It is clearly a contentious question how far the rise in unemployment, and especially the severity of the fall in manu-

facturing employment, should be attributed to the industrial changes I have mentioned, and how far to demand deficiency brought about by inappropriate demand management policy. But there is no point in crying over spilt North Sea oil. Even if I believe that the greater part of the rise in unemployment should be classified as 'demand deficiency' and is not structural, I do not think a return to full employment can come about simply through a revival in aggregate demand. This is partly, of course, the question of re-igniting inflation, but I do not wish to go into that on this occasion. The point I wish to make here is that, whatever the causes of the recession, its depth and prolongation have left a legacy of structural problems which will not, I think, simply dissolve in any general rise in employment. The two most likely ones seem to me to be a shift in the pattern of the demand for labour away from the less skilled occupations, and regional differences in the availability of jobs. Both are likely to require special measures to supplement any general revival of demand. I have time, however, to illustrate only one, and I will choose the prospect for jobs in different parts of Britain.

The regional problem

In setting out the regional employment question, I am going to paint with a very broad brush. I concentrate on employees in employment in Great Britain,[10] which I divide into a South and a North. South is the three Standard Regions of South-West, South-East and East Anglia: North is the rest, five Standard Regions of England *plus* Wales *plus* Scotland. The frontier runs from the Bristol Channel to the Wash. A striking feature of the recent recession was the change in the status of the West Midland region, which in the 1950s and 1960s could be bracketed with the South-East for high growth and low unemployment, but in recent years has joined the North, with low growth and high unemployment.

Earlier on, I showed a chart of the total employed labour force in the United Kingdom (Fig. 1). For present purposes I have to narrow down to employees in employment in Great Britain: only this way can I get a run of figures. Even so, as you will notice in Fig. 3, showing employment in North and South since 1951, I have to break in the middle. It will be seen that whereas in 1951

[10] This excludes employers and the self-employed as well as all Northern Ireland. The reason for the limitation is practical, namely the availability of roughly comparable figures throughout the post-war period.

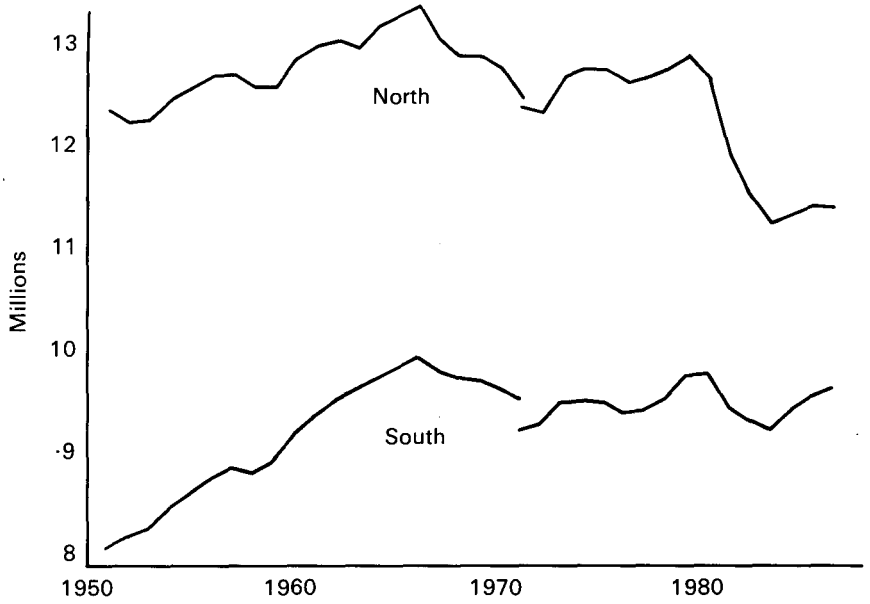

FIG. 3. Employees in employment in GB, 1951–86: North and South. See Statistical Appendix (p. 258).

there were 4 million more jobs in the North, nearly 50 per cent more than in the South, by 1986 the gap had narrowed to 1½ million, less than 20 per cent more. The relative change in the number of jobs has been going on for most of the time, and to bring this out more clearly I have drawn, in Fig. 4, the annual change in the difference in employment between North and South. There seems to have been a fairly uniform decline from 1951 to 1972, at an average rate of 60,000 a year. This period contained first a strong rise, then a sharp fall in employment in both regions, but throughout the level of unemployment was low. Then, in the mid-seventies there was a pause, even a reverse in the balance. But after 1978, the decline is resumed, at nearly three times the previous rate and was now averaging 175,000 a year. The context was one of recession and high general unemployment.

In case this profile might be distorted by the change of allegiance of the West Midlands, I drew the balance of employment chart leaving out West Midlands altogether. It slows down a little the average rate of decline before 1972 and after 1978, but the intervening pause is just as marked.

Although the national average was very low, regional disparities in unemployment rates still persisted in the 1950s and 1960s, with Wales, Scotland, and the North, and North-West of Eng-

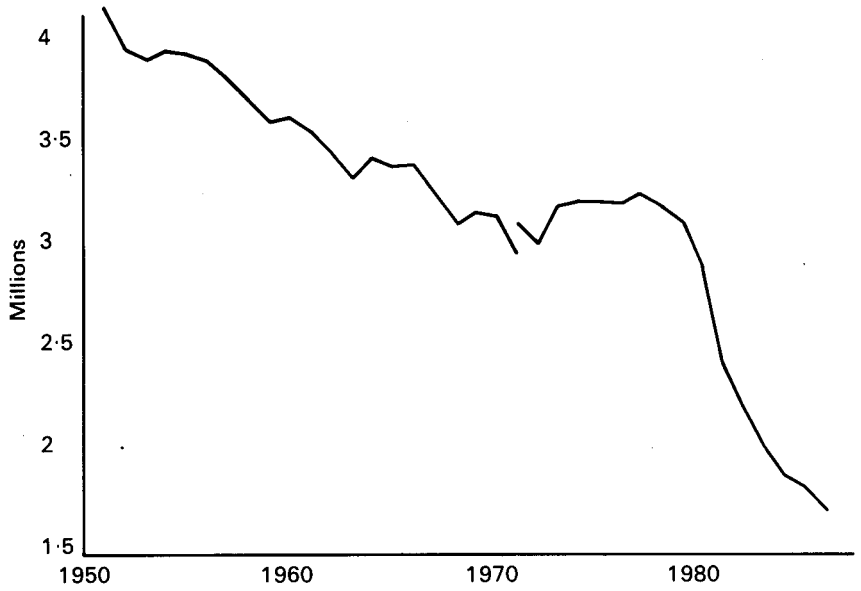

FIG. 4. Employees in employment in GB, 1951–86: difference between North and South. See Statistical Appendix (p. 258).

land being always above, and South-East and Midlands systematically below. Regional rates went up and down with the national average, as did the 'span' between the highest and lowest rates. But in the latest period, when the national rate jumped to 13 per cent,[11] the span between the lowest and highest widened to 8 per cent.

[11] This is the 'old' rate as quoted in the 1986 *Supplement* to *Economic Trends*. The changes in unemployment rates reported by the Department of Employment in recent years have been frequent and bewildering. Most of these changes of definition, or of timing of collection, resulted in a reduction of the published rate. The biggest change, made with the minimum of publicity, took place between the June and July issues of the *Monthly Digest of Statistics* in 1986, when the denominator of the unemployment rate, which used to be employees in employment *plus* unemployed, was increased to include self-employed and HM Forces. The effect in the third quarter of 1985 was to reduce the rate from 12.9 to 11.2 per cent. The following Table, made up almost at random, gives a flavour of the difficulty.

Various figures for the unemployment rate (%) in the year 1977 in Great Britain and in the North Standard Region, taken from sundry official publications.

	Great Britain	North
Annual Abstract, 1979	6.1	8.4
Annual Abstract, 1987	5.7	8.0
Trends Supplement, 1986	5.2	7.0
Trends Supplement, 1987	4.7	6.5

In terms of absolute rates the gap between North and South appears to have widened.

When Arthur Brown published *The Framework of Regional Economics in the United Kingdom* in 1972, he pointed out that the kernel of the regional problem was the maladjustment between the location of people and of jobs, which the inter-regional flow of labour had been insufficient to remove. He also noted that the pattern of surpluses and shortages which had emerged after the First World War had broadly persisted since, and it still persists, with the important addition of the West Midlands and Yorkshire and Humberside to the surplus category. In Brown's research it appeared that the dominant factor explaining the persistence of differences in regional rates was the 'composition effect', whereby in some regions there is a disproportionate share of employment in old, declining, industries, and a smaller than average share in new, growing, ones.

Is the composition effect still at work? We can make a rough estimate. There is a run of figures for the month of June each year from 1971 to 1986 for employees in employment in each of twelve industrial groups.[12] Seven of these groups registered a fall in employment over the whole period, and of these seven, only one—Transport and communication—could be regarded as a 'service' industry: the rest, which includes manufacturing, would be classified as 'goods'. The five growing groups would all be classed as 'services'.

Employment in the declining groups fell throughout the period in both North and South, faster in the former than in the latter, with a pause before the recession (Fig. 5). The five expanding service groups grew throughout, this time with a pause during the recession: the rate of growth in the North was virtually the same as in the South. The composition effect is apparent. At the beginning of the period the North had substantially greater employment in industries about to decline than in those about to expand. The South, on the other hand, had slightly more in the potential growth sector. As a result, the South, overall, has slightly more employment than in 1971, while the North is substantially down.

[12] They are: Agriculture, forestry and fishing; Energy and water supply; Metal manufacturing and chemicals; Metal goods, engineering and vehicles; Other manufacturing; Construction; Transport and communication; Wholesale distribution, hotels, and catering; Retail distribution; Banking, insurance and finance; Public administration and defence; and Education, health and other services.

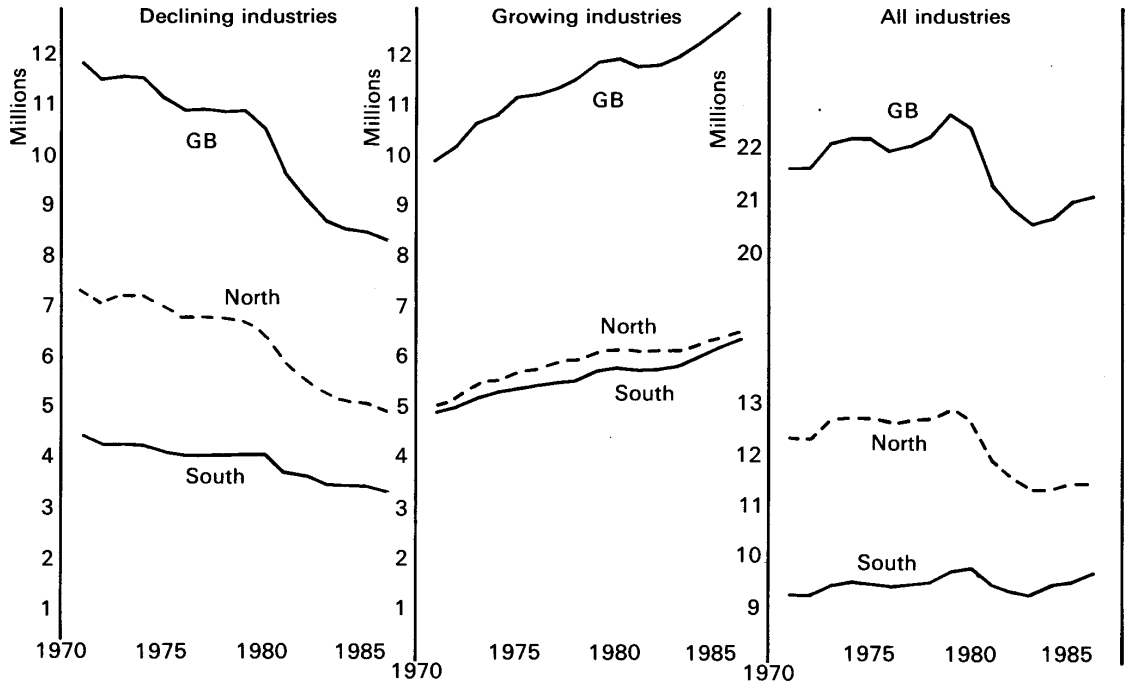

FIG. 5. Employees in employment in GB, 1971–86: growing and declining industries. See Statistical Appendix (p. 258).

The composition effect is, of course, ultimately self-extinguishing. Already the North has more employment in the growing groups than in the declining groups. But the disparity in the South is much greater, so that even if there were level pegging in the growth rates of the expanding sector on both sides of the frontier, the growth of total employment in the South would be faster for many years to come.

But are there any economic objections to the continuation of this process? If market forces lead to jobs increasing faster in the South than in the North, what is wrong with that? At one time it was suggested that there would be increased 'congestion' costs in the South. But I doubt whether any strong argument along that line could nowadays be sustained. There is plenty of land for new development, and the never very valid argument of the sanctity of good agricultural land has little economic basis when there is a need to take land out of cultivation.

A return to full employment being brought about by a general revival in demand, would be led by an even faster growth of jobs in the South, generating local shortages. Jobs would also be growing in the North, but more slowly, so that labour surpluses would persist, but be increasingly drawn on through migration to relieve the shortages in the South.

There are, I have suggested, no *economic* objections to this scenario. Perhaps I should have added—'in the long run'. If the process was long drawn out, there would be a continuing loss of the potential output of the unemployed in the North waiting for the rising tide of employment to reach them. So, if there were any alternative, this would be a cost of the *laissez-faire* route to full employment. But the stronger objection to this route is that it leads to a result which would, I suspect, be rejected by most people on both sides of the frontier, if it could be put to them directly. Those already in good jobs in the South may be quite content with things as they are. They do not want further development to encroach on the countryside which they regard as an enhancement of their lives. Equally, many living in the North may not wish to see communities drained of their younger members, who are the most likely to migrate when opportunity occurs, and who must meanwhile wait in idleness for lack of local jobs.

But is there any alternative? Some believe that weakening trade unions and breaking up national wage agreements would solve the problem, through the expansion of existing firms, and the movement of others from the South to take advantage of

lower wage bills. Whether or not this is realistic, I doubt it measures up to the scale of the problem.

What about the regional policy of central government? There has been some sort of regional policy in place for more than half a century, since the Special Areas Act of 1934. There was a brief flurry for three years after the Second World War, when half of all approved factory building was steered into the newly designated Development Areas. But thereafter, through the 1950s, while many of the instruments of policy remained in place, such as Industrial Development Certificates, they were used with a very light hand. Concern about the persistence of unemployment in certain areas was expressed in the 1960s, and there began a fairly steady increase in the range of instruments and the amount of 'regional policy expenditures'[13] which rose to a peak in 1969, and an even higher one in 1975–6. After that expenditures began to fall back, and in real terms they are now very much lower.

Does regional policy work? Much detailed research has been done on the effects of the many different measures, but on this occasion I said I would use a broad brush. I draw your attention to the charts I showed earlier. The balance of employment shifted fairly steadily from North to South at about 60,000 a year from 1951 to 1972, and at nearly three times that rate after 1978. But in between it hardly changed at all. This pause coincided with the high peak of regional policy and of government 'regional' expenditure. It would be perverse not to see the connection.

I would not wish to defend every single instrument of regional policy which has ever been tried. But to the big question—Is it possible through government policy, and especially resource transfer, to influence the location of jobs in Britain?—my answer has to be—Yes. Even the limited powers and resources still at the disposal of government can be seen to work in encouraging foreign firms to put their plants in areas of high unemployment. Besides assisting private enterprise, the government, as a large employer, has from time to time done its bit by dispersing branches, mostly lower branches, of the civil service. To judge by

[13] DTI expenditures include: regional development grants; regional selective assistance; regionally differentiated investment grants; loans, grants, and factory building under the Local Employment Act (1972); regional employment premium; and land/factory expenditures by English Estates. Regional assistance through the Scottish and Welsh Offices is also included. (See H. Armstrong and J. Taylor, *Regional Policy: The Way Forward* (Employment Institute, 1987).)

the approach being so far adopted in the inner cities, whose problems are part of what I have called the regional problem, no great additional transfer of resources is currently being contemplated. Reliance is to be placed on persuasion, giving information to firms about the possible advantages of setting up in such places—low rents, abundant labour supply, and so on, and urging them to re-develop the inner cities. I might take persuasion more seriously if Parliament were to give a lead, by moving itself, and the Treasury, to Manchester or Sheffield. If that were thought likely to restart the Wars of the Roses, then Derby might be the best choice. But, in the absence of such a lead, I am sceptical of persuading many firms to turn their backs on locations indicated by market signals and their own preferences. In my view, a substantial resource transfer is needed on a much greater scale than is currently contemplated, and it would need to continue until a better balance is achieved between the location of jobs and where people live. However, I am not here concerned with the wider question of market failure, but the narrower one of getting back towards full employment.

Conclusion

I began this lecture by asking whether a significant part of present unemployment in Britain was attributable to changes in the structure of industry. My provisional answer was—not a great deal. It was a provisional answer, because the statistical evidence was indirect, and I was able only to look directly at one or two candidates. There was also an ambiguity about North Sea oil, whether or not one should regard its arrival as an industrial change. Either way, one could account for the greater part of the unemployment increase in terms of demand deficiency, brought about by the coincidence of the arrival of oil self-sufficiency with the first phase of the 'monetarist' contraction. This was later reinforced by the world recession, which was also in considerable part policy induced.

Turning to the second question, whether there might be obstacles in the way of reviving employment, I did not think that simply reversing the engines of macro-economic demand management could take us all the way. The rise in unemployment has not been uniform across occupations, industries, and regions, and there now exist mismatches which may not dissolve before a generally rising tide of demand. I chose as an example of this the mismatch which now exists between where people live

and where the jobs are, or are likely, to be. A broad brush was used, contrasting the fortunes of people who live North and South of a line from the Bristol Channel to the Wash. A good regional policy would be much more discriminating than just drawing a line across England. The problem was presented mainly in terms of the numbers of jobs in the North and South, but the solution would not be one of simply shifting jobs back across the frontier, but of steering to the North a higher proportion of the additional jobs which are in any case needed. Regional policy would not be a substitute for demand management, but a directional version of it. A return to full employment would seem to require both.

Statistical Appendix to Figs 1, 3, 4 and 5

FIG. 1. Working population (WP), employed labour force (ELF) and unemployment (U) in the UK, 1921–86, in millions.

	WP	ELF	U
1921	20.1	17.9	2.2
1929	21.0	19.5	1.5
1932	22.2	18.7	3.4
1936	22.8	20.7	2.1
1939	23.6	22.3	1.3
1943	25.1	25.0	0.1
1946	23.4	23.0	0.4
1951	23.8	23.6	0.3
1956	24.8	24.5	0.3
1961	24.8	24.5	0.3
1966	25.7	25.3	0.4
1971	25.2	24.5	0.7
1976	26.1	24.8	1.2
1981	26.7	24.3	2.4
1986	27.8	24.6	3.2

Sources: 1921–50: C. H. Feinstein, *National Income, Expenditure and Output, 1855–1965* (CUP, 1972); 1951–86: *Economic Trends*.

FIGS. 3 AND 4. Employees in employment in GB, 1951–86: North, South and difference (N – S), in millions.

	North	South	N – S
1951	12.32	8.20	4.12
1956	12.69	8.81	3.88
1961	12.95	9.41	3.54
1966	13.33	9.96	3.37
1971	12.36	9.29	3.01
1976	12.60	9.43	3.18
1981	11.90	9.48	2.41
1986	11.40	9.67	1.72

Sources: 1951–71: *British Labour Statistics, 1886–1968*, and *Yearbooks*; 1971–86: *Department of Employment Gazette* (February 1987).

FIG. 5. Employees in employment in GB, 1971–86: North and South, growing and declining industries, in millions.

	1971	1976	1979	1981	1983	1986
*Growing industries**						
GB	9.84	11.17	11.80	11.73	11.84	12.80
North	5.00	5.78	6.10	6.04	6.06	6.48
South	4.84	5.39	5.70	5.69	5.78	6.32
Declining industries†						
GB	11.81	10.86	10.84	9.65	8.72	8.27
North	7.37	6.82	6.76	5.86	5.22	4.92
South	4.44	4.04	4.08	3.79	3.50	3.35
All industries						
GB	21.65	22.03	22.64	21.39	20.57	21.07
North	12.37	12.60	12.86	11.90	11.28	11.40
South	9.29	9.43	9.77	9.48	9.28	9.67

*Growing industries: Wholesale distribution, etc.; Retail distribution; Banking, insurance and finance; Public administration and defence; and Education, health and other services.

†Declining industries: Agriculture, etc.; Energy and water supply; Metal manufacturing and chemicals; Metal goods, engineering and vehicles; Other manufacturing; Construction; and Transport and communication.

Source: *Department of Employment Gazette* (February 1987).