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REPORT FROM A VISIT AT THE INSTITUTE FOR EMPLOYMENT RESEARCH,
UNIVERSITY OF WARWICK, 28 JUNE - 10 JULY 1982

by

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CONTENTS

	Page
1. Background, purpose and results	1
2. The Institute for Employment Research	1
2.1. Environment and organization	1
2.2. Research	2
3. Labour demand	3
3.1. Overview	3
3.2. Output by industry	3
3.3. Employment by industry	3
3.4. Employment by occupation	3
3.5. Part-time employees	4
3.6. Employment by sex	4
3.7. The employment effects of micro-electronics	4
4. Labour supply	5
4.1. Overview	5
4.2. Forecasting labour supply	5
4.3. Cohort life-cycle analysis and forecasting	6
4.4. The effect of unemployment on participation rates	7
4.5. Other labour supply relevant work	8
5. Disaggregation by region	8
5.1. Overview	8
5.2. Regional demand	8
5.3. Regional supply	9
5.4. Regional unemployment	9
5.5. Migration	9
5.6. Further research and plans for improving the regional forecasts	10
Literature	11
Appendix: A Presentation of the Institute for Employment Research (previously Manpower Research Group)	13

1. BACKGROUND, PURPOSE AND RESULTS

The visit was financed with grants from the British Council, Professor Wilhelm Keilhau's minnefond and the Central Bureau of Statistics. The purpose was to establish contact with a research unit with which we share common research ground. From contacts between members of the two research units at international conferences at Chaire Quetelet and in Strasbourg, it seemed that we could all benefit from further discussions and exchange of information. The tasks and problems were to a large degree similar, whereas the solutions would differ in many respects, thus providing a basis for mutual learning.

The response at the Institute to our initiative was very open and helpful, and the reception an example of hospitality. In hindsight, the two weeks should have been extended to three or possibly four. A longer stay would probably have been even more rewarding, but would have required more planning and a program more specific than just to obtain an overview of research.

The visit was arranged as a series of meetings on those fields of research concerned with forecasting the labour market. These fields are covered by the chapters 3 - 5 in the report. This proved to be an efficient way to communicate, and combined with the open reception I met at the Institute, I feel we had fruitful exchanges of ideas and experiences on ongoing research. The personal contacts made will, hopefully, provide a basis for communication on further research.

A special problem stemmed from the paucity of documentation in English of our research. I had to spend a lot of time describing projects and results, and translating important parts of publications. However, the publications with English summary and English subtexts in tables and figures were considered very useful.

Regarding the visit as a whole, my expectations were fully met, and I may warmly recommend that such visits also be made to other institutions. The provisional papers and the discussions gave an overview of research which will not be available in journals, etc. for some time, and then without the informal comments I was able to receive through the discussion. As for the future, we have a basis for communication with an advanced research unit in the labour market field, which may yield substantial benefits to both units.

As for short-run benefits, we shall consider the cohort supply approach as a possible alternative in our next version of the supply model MATAUK, cfr. Fridström (1981).

2. THE INSTITUTE FOR EMPLOYMENT RESEARCH

The background, organization and research fields and strategy are outlined in the appendix, and I will here give only the main points and some comparisons with the Sociodemographic Research Unit. The change of name from Manpower Research Group to Institute for Employment Research, has no implications for the work carried out.

2.1. Environment and organization

The Institute has an academic staff of about 8, mostly economists plus associate fellows from other institutions, collaborating with the Institute. It is part of the University of Warwick, which is a rather new university, planned in the 60s, with about 5 000 students. Although the Institute is part of the University, it has no students of its own, and it is financed by grants from the Manpower Services Commission and from other bodies for special projects carried out.

Apart from clerical services, there is a vertical integration within the Institute. Within each of the three major areas described below, the academic staff is fairly self-contained. The data sources are mostly time series aggregates from surveys, which have been carried out by other bodies. From this starting point, data conversion into suitable form, estimation, model implementation and model simulation, is done by the Institute staff. The programming is mostly carried out in FORTRAN, or with SPSS, TSP or NAG.

The computer used was shared with others at the University, and was not the responsibility of the Institute. This seemed to parallel our relationship with Statens Driftssentral. On the programming side, the need was felt for a specialist programmer. In the present situation, the burden of programming on the research staff is rather heavy.

Within such a fairly small unit, the coordination problem did not appear to be great. It was solved by placing the responsibility on three senior research fellows which headed the work in the various areas. In addition, the regular assessments of the economy and employment prospects involved all the staff in common projects (lately biannually) and provided a framework for further research.

An interesting aspect is the cooperation with the Department of Applied Economics at the University of Cambridge. The Institute is running their own version of the MDM (multisectoral dynamic model) which has been developed in Cambridge. On the one hand, this requires quite a lot of work. A full simulation on the model, such as is used e.g. for the regular assessments, will occupy two persons full-time for about three months. On the other hand, it gives very good insight into the model, and the Institute has been able to improve some parts of the model which are particularly relevant for the labour market. Such improvements are reported back to Cambridge for possible incorporation in future versions of the "main" model. The responsibility for this model lies in Cambridge.

Much emphasis was placed on the communication with the users of the forecasts. Provisional assessments have been released, after considerable discussion at large meetings of current and potential users, especially those in the Manpower Services Commission, industrial and training boards, and government departments. The detailed knowledge would often cause revisions to be made in the final forecasts, and the contacts made would signal the needs of the users.

2.2. Research

The research fields of the Institute are briefly set out in the appendix. Three broad objectives mentioned there, are to

- maintain regular assessments of Britain's economic prospects over the medium term, dealing with output and employment at a highly disaggregated level,
- study particular segments of the labour market, and
- develop models of certain general processes which affect the operation of the labour market and its relationship with the rest of the economy.

To meet these three objectives, the work has been divided into four areas, extensively described in the sections 3-5:

- (i) Forecasting output by industry with a multisectoral economic model. This includes model running and research and model improvements in areas such as foreign trade and wages.
- (ii) Forecasting demand for labour, based on the forecasts of output by industry. This includes analysis and forecasts of productivity and special occupational studies.
- (iii) Forecasting supply of labour. This includes analysis of labour supply with special regard to the dependence of the participation rates on unemployment (discouraged workers).
- (iv) Disaggregating all the forecasts by region. This includes migration studies.

The results in each of these four major areas are combined in regular assessments of the economy and employment prospects, which seem to employ a large part of the resources at the Institute. These assessments have recently been worked out each year, the latest dated spring 1982. As will be more fully described in the following sections, they aim 5-10 years into the future, and try to combine projections of the supply of and demand for labour, to give projections of employment and unemployment. This is carried out at the regional as well as at the national level, but with no disaggregation by qualification.

The assessments seemed to play an important part in coordinating and directing research in the various areas, even though they are not set up as a final goal, toward which all other research at the Institute should lead.

3. LABOUR DEMAND

3.1. Overview

Forecasts of demand for labour, used synonymously with employment in the present labour market situation in U.K. are made with a system of models, in three major steps. First, output in the economy is forecast as described in section 3.2. In the second step, employment is derived from output as described in section 3.3, and in the third step, demand for labour is disaggregated in various ways, as described in sections 3.4-3.6. The regional disaggregation of labour demand is described in chapter 5, along with disaggregation by region of labour supply.

The attempts to build regional input-output models had so far yielded little results, mainly due to the paucity of recent data. My impression was that the activity in this area was very low for the time being.

3.2. Output by industry

The first model that is run, is a version of a multisectoral dynamic model (MDM). Main responsibility for this model lies within the Department of Applied Economics at the University of Cambridge, and it has been developed within the project now named Growth and Fluctuations in the British Economy: Projections for Planning. MDM is described by Barker et.al. (1980) and by Barker (1981). There is also a description in Norwegian by Tveitereid (1981). The Institute receives updated versions of the model, and adds special features, as described below. An earlier version run by the Institute is described by Lindley (ed., 1980). Recent changes are briefly mentioned in the Institute for Employment Research (1982), hereafter referred to as the Review (1982), and are more fully described below.

Regarding the structure of MDM we need here only note a few important aspects. It is an input-output model which is more "closed" than e.g. MODIS, in that all final deliveries except government spending and taxation, are explained within the model. The model is intended for medium and long-term forecasting. Investment is explained by changes in production. Exogenous assumptions about government expenditure and taxation and the level of world trade will then determine the level of output in about 40 industries. As described below, this is converted into demand for labour. Thus, the labour market is not necessarily cleared.

The MDM version at the Institute has been changed in three ways, which will be only briefly mentioned here. Firstly, there has been an extension which gives an account of monetary flows. However, there are no major effects back on real terms. Secondly, exchange rates have been made endogenous. Thirdly, wages have been made endogenous, as described by Whitley (1980).

3.3. Employment by industry

Employment by industry is calculated from output by industry in two steps. What is called "optimal productivity" is calculated in the first step, and fluctuations in actual productivity in the second. Productivity is defined as gross output per person.

Optimal productivity is interpreted as "... the level of productivity which might be achieved having regard to both the technical specifications of the capital stock and the social economic environment in which productivity changes are evolving " (Lindley, 1980: 390). Forecasts of optimal productivity are presently exogenous, as described in the Review (1982). The forecasts are, however, based on analysis of past trends, and there is work in progress to develop methods to make endogenous forecasts of optimal productivity from forecasts of other variables. The result so far and the plans are to be found in Murton and Wilson (1980) and in Wilson (1979c, 1981a and 1981b).

3.4. Employment by occupation

Disaggregation by occupation is done only on the demand side. On the assumption that demand for each occupational group is less than supply, the disaggregation yields the number actually employed

in the various occupations. The method of disaggregation is fairly simple and described by Lindley (1980: 120-127) and in the Review (1982: 66-79). Based on observations from the censuses in 1961, 1966 and 1971, the distribution by occupation in each industry is used to split employment forecast by industries into the 18 occupational groups in Lindley (1980: 394). The occupational coefficients appeared to be fairly stable, although the number of observations was only three, thus preventing rigid testing.

In the forecasts made at the Institute, occupation seems to play the part education plays in some Norwegian forecasts. A main reason for choosing occupation, is the paucity of data for educational stocks. In the analysis that has hitherto been made, there is also another difference to bear in mind. While our analysis with MSG as the demand model implies that aggregate labour input in production equals aggregate supply, ruling out aggregate unemployment, also aggregate labour demand is endogenous in MDM. Consequently, aggregate unemployment is forecast. However, supply is disaggregated only by sex. The possibilities of studying mismatches by kind of labour is therefore very limited.

In the forecasts the 18 occupational groups mentioned are sometimes aggregated into manual and non-manual. In addition, there have been special studies of the demand for special kinds of highly qualified manpower, such as engineering craftsmen and technicians within the engineering sector. These analyses are econometric in nature, and try to link employment of different occupational groups to predicted output and wages. Thus, the result can be used in submodels to forecast employment by industry. The estimation of such models are described by Bosworth (1979) and Briscoe (1981).

Other work concerning the occupational structure was partly empirical and partly analytical. The EITB (Engineering Industry Training Board) sponsored utilization of the National Training Survey to investigate the occupational structure within the engineering industry and the flows of qualified manpower to and from other industries. Still in the very early stages there is a project to study substitution of various types of labour. There is also an ongoing project which aims at compiling comparable data and at investigating the occupational structure and changes in France, Germany, Italy, U.S., Spain and U.K.

3.5. Part-time employees

As explained in the Review (1982: 62), the composition of the labour force by part-time/full-time employees is projected by an extrapolation of past trends in the various industries.

3.6. Employment by sex

Disaggregation by sex is also rather ad hoc, as described in the Review (1982: 64). Past trends in the proportion of female employment are adjusted "in light of recent information".

3.7. The employment effects of micro-electronics

In a paper by Whitley and Wilson (1981) there is described a preliminary attempt to quantify the effects of the introduction of micro-electronics. As is stressed in the paper, much of the public debate is centered around examples of displacement of workers in specific functions or in specific industries or branches. However, there has not been much research into the total effects on employment, i.e. after account is taken of the repercussions throughout the whole economy. Even if this is a very difficult task, there is obviously one area where something could be done, namely regarding the productivity assumptions in the macro-economic forecasts.

The first problem is whether there will be any changes at all in present trends of technological change. Some of the arguments heard in the debate, seem to imply that a sharp break is anticipated. However, the process may be under way already, and we may not be in for any major changes. This is a question which cannot be answered without additional research, possibly at the micro level, but then with a view to assessing macro effects. The experience of the Institute was that much of what had been done at the micro level could not be translated into terms of macro-economic forecasting. Consequently, the Institute had relatively little help from this approach in simulating the effects of micro-

electronics with the macro-economic forecasting model. However, there had been some talk with other research groups which were more "micro-oriented" (among them the Science Policy Research Unit at the University of Sussex), and there were prospects of a better coordination of research.

Assuming that there might be a change in productivity trends, Whitley and Wilson attempted to simulate the effect. This effect would then be interpreted as the impact of technological change compared to a continuation of the present trends.

Since the existence of such an effect is dubious, estimates of the magnitude are rather speculative. The attempt that is made, is then perhaps more a framework within which to launch future empirical research, than a quantitative assessment of the employment effects of micro-electronics.

Rather than trying to simulate for all industries, only 13 of the 44 were selected. For these, information about technology was better than for the rest. For these industries, forecasts were made of the increase in productivity. This increase would then directly reduce the demand for labour (displacement effect). But it would also lower the prices of the products, and in the forecasting model, this would roughly offset 50 per cent of the direct displacement effect, after taking account of all multiplier effects. To bring new technology into the production process, it was assumed that investment had to increase, and that is simulated by an upward shift in the investment function. As there may be changes in the product sphere, it was assumed a change in the composition of private demand, towards cars, radio and electrical goods and a list of other types of commodities. As the simulation should mirror the effect of improved technology in the U.K., *cet. par.*, there is assumed increased export price-elasticities and reduced import shares. In addition, there has been some adjustments of import shares for special sectors. Finally, changes in the structure of investment and intermediate demand regarding the electrical and the mechanical engineering sectors were assumed. These are very uncertain, but the changes as well as the effect are rather small.

In all, this simulation results in an increase in aggregate employment. Part of the direct displacement effect is offset by a price-induced multiplier effect through higher demand resulting in a higher production. In addition, the rise in investment and exports increases production even further, more than offsetting the rest of the displacement effect. This is not taken as indicating that micro-electronics will necessarily increase employment in the immediate future, but as indicative of the importance of some of the positive effects which tend to offset the initial displacement impact.

4. LABOUR SUPPLY

4.1. Overview

The research on labour supply seem to have been directed by two main factors. The first is the regular, medium term assessments of the labour market, which call for forecast of labour supply 5-10 years into the future. The basic approach is to apply participation rates to a population forecast. The other main factor is the current high level of registered unemployment. In mid-seventies, it started to rise to its present level of about 12 per cent, and it was felt that it would have a "discouragement" effect on the participation rates, which would have to be incorporated into the regular assessments. This has directed the bulk of supply related research. Much of the work has not yet been given its final documentation, and in the following section, I will try to describe the main parts, and give references to (mainly) provisional papers, of which I have copies. As my presentation is partly based on my understanding from discussions, it may contain mistakes and unclear points, which reflect my misunderstanding rather than the state of the research. Forthcoming publications will hopefully correct any such occurrences.

4.2. Forecasting labour supply

The forecasts of labour supply in the latest assessments, *cfr.* the Review (1982), also attempt to forecast the effect on participation rates of "discouragement" by the high rates of registered unemployment.

The approach consist of three main steps. The first step is a population forecast by age, sex and (for women) married/non-married status. This forecast is not worked out at the Institute.

The second step is an initial forecast of the labour force participation rates, without effect of discouragement, from the base year 1981 until 1990. This is made with the cohort participation model described in section 4.3, and is called the basic profile in the Review (1982: 44).

The initial forecast is interpreted as a forecast of participation rates in a labour market with the 1981 level of unemployment at about 12 per cent. However, comparison of the initial forecast of aggregate labour supply and the forecast of aggregate demand, yield an even higher rate of unemployment. This is assumed to discourage some marginal workers from seeking employment, and the third step in forecasting is therefore to adjust the initial participation rates and thereby labour supply. Estimation of the adjustment effect is described in section 4.4.

The discouragement effect is assumed to depend on registered unemployment. In the initial forecast, this is estimated by applying a rate of propensity to register as unemployed, assumed to rise for females from 67 per cent in 1981 to 75 per cent in 1990, and to remain at the 1981 level of 90 per cent for males. The level in 1981 is estimated from The General Household Survey, where respondents were asked whether they were looking for work and whether they were registered as unemployed.

To test the models, a forecast was made of participation rates for 1981 and compared to the actual rates for that year. The initial forecast was made with the cohort participation model, and the adjustment for discouragement effects with the elasticities from table 2.14 in the Review (1982: 46). This performed fairly well as a forecast of participation rates in 1981. In the forecasts to 1990, the adjustment of the initial participation rate forecasts was much smaller than the adjustment for 1981, as the initial estimates of the unemployment by 1990 was only about 1 percentage point higher than the initial 1981 level of unemployment. The adjustment does not, therefore, play a fundamental role in the forecasts. The question will rather be whether the discouragement is stable over time.

4.3. Cohort life-cycle analysis and forecasting

The basic profile of labour force participation is forecasted from the base year level in 1981 with a cohort model, described by Main and Elias (1982a). The data basis and the model are described below.

The data source is a national survey of over 54 000 persons, The National Training Survey, cfr. Main and Elias (1982a). It contains interviews with a representative sample of persons aged 16-59/64 (women and men, respectively) in late 1975 and early 1976, who were asked for details of their main changes of occupation or labour force status from the end of their continuous full-time education to the date of the survey (Main and Elias, 1982: 2). This survey contains a lot of interesting and complex information, and the paper by Main and Elias indicates that much work has been put into extracting a description of labour market behaviour and into structuring the data for model estimation. The data seems to resemble Yrkeshistorieundersøkelsen, and it might be useful for us to have a look at the way The National Training Survey has been processed.

In the model that is estimated and used for forecasting the basic profile, the fraction of a given cohort that is employed in a given year, is postulated to be a linear function of the following groups of variables:

Cohort descriptive variables

- The proportions of the cohort with the various types of qualifications, ranging from no school leaving exams to a university degree. The number of qualification groups are 21, and they are not mutually exclusive, since informants are grouped by all their qualifications.
- Dummy variables for five-year cohort groups.

Life-cycle descriptive variables

- The average number of children by six age groups, 0-1, 2-4, 5-7, 8-9, 11-13 and 14-16. The number of children enter the participation function for both sexes. The number of children are not directly observed, but constructed from fertility rates, lagged for males with the diffe-

rence in mean marriage age between males and females. Deaths and migration amongst children are not taken into account.

- Age and age squared.

Period descriptive variables

- The proportion of total (insured) employment in the manufacturing sector. This data series has been normalized around the 1948 Standard Industrial Classification.
- The ratio of female to male average hourly earnings for manual workers 1938-74. Observations for selected manual occupations were also obtained for 1928, 1931 and 1935 and the data interpolated to yield a time-series from 1927 - 1974.
- Male registered unemployment rate, GB annual average 1927 - 1974.
- Dummy variable taking a value 1 for each year 1939 - 1945.
- Time trend, 1927 = 1 for males
1932 = 1 for females.

State dependency variables

- Average proportion of cohort in labour force previous year (lagged endogenous variable).
- Length of average uncompleted spell as housewife in previous year (i.e. including only those spells which lasted till the end of the year).

The methodological approach is rather pragmatic. An aggregate labour force participation function for the cohort is postulated directly, and not derived from assumptions on individual behaviour and aggregation. Also, there is no explicit consideration of the simultaneous equation bias resulting from the market wage being influenced by supply as well as by demand. It is also worth noting that the estimated function does not allow any interaction effect of the variables.

The attitude seems to have been that this rather crude method would suit the purpose, which was to give a description of labour market attachment over time of cohorts, and to trace connections with the set of variables available. A multivariate regression would then be sufficient, and the bulk of the effort went into structuring the data and interpreting the results. It is worth noting that the multiple correlation coefficient from the regression was as high as 0.99 and 0.97 for females and males, respectively. There is, however, high serial correlation.

As for the estimation results for the model, I will refer to the paper, and only briefly recapitulate some of the main results.

For us, it is worth noting that none of the qualification variables were found significant. However, they may be correlated with the cohort dummies, and thus having their effect captured by these coefficient estimates. Age was found to have a depressing effect on participation, six percentage points for females for age increasing from 25 to 45 years. After that, no depressing effect was seen. However, the imposed polynomial of grade two in the participation function may hide more complex patterns. As for children, it was interesting that one more child in the age group 2-4 years, increased female participation by 28 percentage points, whereas one more child aged 0-1 year decreased participation by 59 percentage points.

The state dependency was found to be important. Following a cohort, an increase in participation of p percentage points for year t till $t+1$, would, ceteris paribus, increase the participation in year $t+2$ compared to year $t+1$ by $0.7 p$ for females and $0.5 p$ for males.

4.4. The effect of unemployment on participation rates

A comparison of demand for and initial forecast of supply of labour, yield an initial forecast of unemployment. In the forecasts till 1990, cfr. the Review (1982), this was higher than the 1981 level of unemployment, and the participation rates was adjusted downward, to account for "discouragement". The magnitude of the adjustment effect was estimated as described below. The resulting estimates which are given in table 2.14 in the Review (1982), are applied to the differences between the initially forecasted and the 1981 level of rate of registered unemployment. The result is subtracted from partici-

pation rates during the forecasting period, but with the effect increasing till 1990, as it was assumed that the "discouragement" would gradually come into effect.

The estimates in table 2.14 in the Review (1982) are updates of estimates from Elias (1980), including also males and non-married females. The data base in that paper is quarterly survey data for the period 1968 - 1975, but the updates also include later years with rising unemployment. The observations for these years are the basis for the estimates in table 2.14 in the Review (1982), which give the effect on participation rates of changes in the level of registered unemployment.

The effect of unemployment is what is needed for the forecast, but the paper by Elias (1980), which only looks at married women, also studies the relationship between labour force participation and other variables. These are the cohorts' average wages for the women and for the husbands, other household income, unemployment rates for wives, husbands and other persons in the household, the percentage of households without children in the following age groups: 0-1, 2-4 and 5-15, and without children at secondary state school, and if so, average number, and finally, the percentage renting a phone.

The approach is quite similar to the one in section 4.3, in postulating an aggregate participation rate function as a function of aggregate variables, for the cohort in each quarter. Independent regressions were run for married women in five-years age groups from 16-19 till 60-64, and for 65 plus. For the age groups between 20 and 54, the multiple correlation coefficient ranged from 0.74 to 0.90.

4.5. Other labour supply relevant work

Using data from The National Training Survey, a special study has been carried out of part-time workers. As described by Elias and Main (1982), the purpose was threefold: To describe the part-time workers by occupation, age, sex, family structure and educational qualifications, to investigate the role of part-time work in workcareers and to investigate the degree of unionization amongst part-time workers.

5. DISAGGREGATION BY REGION

5.1. Overview

The regional forecasts are disaggregations by 11 regions of the national forecasts. This "top down" approach ensures that all improvements in the national model automatically improve also the regional forecasts. On the other hand, all restrictions in the national model are carried over in the regional forecasts. For instance, the current national model does not allow regional conditions to influence the national level of employment, which in turn equals the sum over regions.

At present, a lot of research is going on to improve the regional model, some of which has been implemented. Some of this will be reported below.

5.2. Regional demand

Forecast of demand is less than forecast of supply for the period till 1990 in all regions. It is therefore assumed that employment will equal demand, and the two expressions are used synonymously also in the regional forecasts. One should bear in mind that, due to a lack of data, there is no regional supply forecast by kind, e.g. by occupations, so that regional mismatches regarding qualifications are not studied.

Regional forecasts of employment are derived from the national forecasts with basically the same methods as described by Keogh and Elias (1978) and Elias and Keogh (1979). Below, I will outline the main ideas.

Forecasts are made independently for each industry in each region. After summing over regions, only minor adjustments were necessary to arrive at the original national forecasts.

The forecast for each industry in each region, is made from an analysis of past trends. First, a relationship between the regional and the national employment in the industry in question, is estimated over a base period of about 15 years. Experiments were made with linear as well as with log-

linear relationships, and with relating the regional level of employment as well as the regional proportion, to the national level. Experiments were also made, which included the lagged endogenous variable as an explanatory variable. The best fitting relation was chosen (for each industry in each year), and regional forecasts were calculated from national forecasts by industry.

5.3. Regional supply

The regional labour supply is forecasted from a regional demographic population forecast, and from forecast of regional labour force participation rates, by sex and age. These rates are based on the forecasted national rates described in chapter 4. The rates used are those which have been adjusted for "discouragement" by rising unemployment. The method is to apply regional relativities to the national rates. These regional relativities are simply the regional rates divided by the national level.

The crucial point is, of course, the forecast of these regional relativities. This is based on an analysis of the regional variance during the period 1968 - 1977, described by Molho (1981c). He investigates regional variation in participation and in explanatory variables such as wages, rates of unemployment, age and number and age of children. The results, which are used in the labour market forecasts, are that the development over time in the variation over regions, can be statistically attributed to development in the explanatory variables. The variation in these are decreasing, causing a decrease in the regional variance, and a convergence of the regional relativities towards unity.

The decrease in the regional variance in the explanatory variables is assumed to continue, and consequently it is also assumed that the regional variance in participation rates will continue to decrease. The forecasting method is rather crude, prolonging "by hand" observed trends in the relativities towards unity. The resulting labour supply is finally adjusted to equal in aggregate the original national level.

The levels of regional relativities may be interpreted to incorporate regional "discouraged worker" effects from the base period, but a future shift in the regional distribution of unemployment (should that come about or be forecast), might have regional discouraged workers effect that will not be incorporated in the present framework.

5.4. Regional unemployment

The final step in the regional forecasting, is to forecast the regional registered unemployment. The reason for forecasting registered unemployment and not only total unemployment, is that it is a politically interesting variable.

The method is to apply regional relativities in the propensity to register as unemployed, to the national propensity. The data base is a survey containing questions as to whether respondents are unemployed and whether they are registered as unemployed. Figures are constructed for the years 1975, 1977 and 1979. For the forecasting period, trends were selected where they could be observed, and otherwise averages were used. The method and results are described by Molho (1981a).

5.5. Migration

The migration in the population forecast is calculated from rates by demographic characteristics. Thus, there is no effect on migration from variables such as unemployment. However, a lot of work has recently been done on migration at the Institute. Elias and Molho (1982) estimated the relationship between gross migration between regions as a proportion of the product of the population of each two regions, and unemployment rates, the annual change in employment, earnings, the distance between the regions and a variable for attractivity. The last variable is based on questions about regional preference, "other things equal", in a survey. In the estimation equation, each of these enter as two variables, one for the region of origin and one for the region of destination. Significant relationships were found between migration and unemployment, distance and the attractivity variable. Similar work is also to be found in Molho (1982).

So far, none of these results have been incorporated in the migration forecasts in the assessments.

5.6. Further research and plans for improving the regional forecasts

Large metropolitan areas

Special attention is presently being directed toward the problems in inner city areas, such as increasing unemployment, rising poverty, etc. As described by Elias and Keogh (1982) current research is investigating this development, and also trying to describe it better than has been the case till now. In principle, this approach can be viewed as an attempt to disaggregate the labour market analysis further than by the 11 regions and to go deeper into the process. At the Institute, the plan is to extend the special studies carried out so far, to cover all the major urban areas in U.K. An important point of departure will be to consider the processes within large areas, in particular the distribution of jobs, housing and other factors affecting the living conditions, and to understand the dynamics that are at work.

Regional output-employment relationship

In forecasting labour market demand, the relationships between output and labour demand is estimated only at the national level. A regionalization of these relationships are among the plans for improvement of the forecasts.

Occupation by region

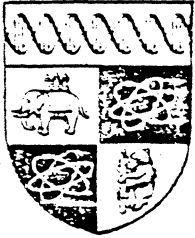
Also the occupational dimension is planned to be incorporated in the regional demand forecasts. However, the supply forecasts will probably still be without occupational specification.

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APPENDIX: A Presentation of the Institute for Employment Research
(previously Manpower Research Group).



University of Warwick

Manpower Research Group

The Manpower Research Group was established in 1975 with a major programme grant from the Manpower Services Commission. The Group is concerned with multisectoral macroeconomic forecasting and policy, the analysis of employment at the industrial, occupational and regional levels and the modelling of various aspects of labour market behaviour.

Background

Research in the general field of labour economics and employment forecasting has been in progress at the University of Warwick for more than a decade. A pilot project led by Professor F.G. Pyatt and financed by the Engineering Industry Training Board studied methods of manpower forecasting during 1968-69: the two senior investigators were Dr. K.G. Cowling, now Clarkson Professor of Industrial Economics at the University, and Dr. J.S. Wabe. A five-year research grant was subsequently awarded to Professor Pyatt by the EITB on the basis of which the Manpower Planning Unit was formed in 1970. Dr. Wabe became its director in 1971. The Unit's work focussed upon the analysis of those labour markets of particular importance for the engineering sector. This led to research publications concerned with the modelling of labour demand and supply at various levels of disaggregation and with the relationship between engineering and other sectors of the economy.

The Manpower Research Group

The Manpower Research Group (MRG) was established in October 1975, financed by the Manpower Services Commission and directed by Dr. R.M. Lindley. The MRG operates within the umbrella of the Centre for Industrial Economic and Business Research, as with earlier projects, but its scale and organisation make it largely self-contained: the Group has its own executive officer and all costs associated with the research undertaken are covered either by the main programme grant from the MSC or by other specific grants. In 1976 the CIEBR project which continued research for the EITB, following the completion of the 1970-75 research programme, was brought within the MRG. Other projects have been financed by the Commission of the European Communities, the Department of the Environment and the Equal Opportunities Commission.

Research

The MRG has three broad research objectives, the first of which is to maintain a regular assessment of Britain's economic prospects over the medium term, dealing with output and employment at a highly disaggregated level. The second objective is to conduct special studies of particular segments of the labour market and the third is to develop models of certain general processes which affect the operation of the labour market and its relationship with the rest of the economy.

The Group's first full-scale assessment, Britain's Medium-Term Employment Prospects, was published in 1978 and received considerable coverage from the national media. This study was the most detailed analysis to be published in the UK dealing with the future of employment and its sensitivity to alternative policies and changes in the world economic environment. It was believed to be the most thorough attempt by any group of European economists to follow through the employment implications of the economic situation likely to emerge in their country over the medium term.

Three special studies currently in progress concern the labour markets for engineering craftsmen, skilled construction workers and highly qualified technical manpower. Two others focus on the employment of women and young people. The general modelling work has covered labour supply and demographic accounting, the determinants of labour demand, and the occupational and regional aspects of employment changes in the UK economy.

The range of research and its relevance to the major issues of economic and social policy for the 1980s are illustrated in the Group's study, Economic Change and Employment Policy. This book examines in greater depth the difficulties facing the UK in its struggle for growth and higher employment. Simulations, using a multisectoral macroeconomic model, highlight the probable scale of the employment problem, the nature of the policy dilemma associated with it and the implications for different industries, occupations and regions. This analysis is followed by the study of three key aspects of medium-term development: the employment of women, skilled manual workers, and scientists and technologists. The book concludes with a review of employment policy as it has evolved during the 1970s and considers the shape it might take for the future and the extent to which a labour market policy might emerge.

The use of research findings in policy, beyond the publication of the sort of work mentioned above, is considerably enhanced by the contact maintained between the MRG and the Manpower Services Commission and relevant government departments. Regular annual assessments of industrial output and employment are supplemented by other studies in the course of the year.

Research on the engineering sector has continued under the MRG with particular attention being given to the economic environment facing different engineering industries and to the employment situation for craftsmen and technicians. During 1978-80 the MRG took the lead in a project financed by the Commission of the European Communities and involving collaboration with Belgian and French academics - Professor J-L. Kruseman (Mons) and Professor M. Falise (Lille) and colleagues. This concerned the impact of public expenditure upon the structure of employment in Belgium, France and the United Kingdom. Research highlighted the ultimate effects of current expenditure and social capital formation on industrial employment in the three economies.

Other research-related activity

The macroeconomic model now used by the Group is a version of the Cambridge Growth Project's model MDM (Multisectoral Dynamic Model), adapted and developed by the MRG to meet the needs of our research programme. The links between the MRG and the Growth Project, directed by Dr. Terence Barker and Professor Richard Stone, have led to a fruitful exchange of ideas, research findings and basic data.

The value of contact with other professional economists involved in forecasting the economy has been recognised at a more general level. The 'Seminars on Modelling the UK Economy', organised by the MRG, have been attended by staff from the Bank of England, Cambridge Growth Project, Centre for Economic Forecasting (London Business School), H.M. Treasury, Model-Building Unit (University of Southampton) and the National Institute of Economic and Social Research.

The Group organised a conference on 'The West Midlands Economy in the 1980s' in June 1980 and will be arranging several specialist conferences on aspects of the economy and the labour market, starting in May 1981 with one on 'Labour Market Behaviour - As captured in the National Training Survey'.

MRG staff contribute to the teaching programme of the University and the MRG also runs a Workshop during term-time. In addition to staff at Warwick, the following academics from other institutions have, in the course of the last three years or so, presented the results of research in progress:

R. Disney (Kent), A. Dean (NIESR), R. Hart (Strathclyde), D. Vines (Cambridge), C. Greenhalgh (Southampton), G. Anderson (Southampton), C. Sinclair (Durham), D.L. Bosworth and P. Dawkins (Loughborough), W. Merrilees (Sydney), B. Chiplin (Nottingham), A. Hamlin and P. Geroski (Southampton), J.S. Wabe (Bath), J. Muellbauer (London), A. Zabalza (L.S.E.), S. Estrin (Southampton), P. Ryan (Cambridge), J. Taylor (Lancaster), E. Owen-Smith (Loughborough), T. Buck (Nottingham), T. Mallier and M. Rosser (Coventry Polytechnic), J. Proops (Keele), P. Jackson (Leicester).

MRG publications

The research findings of the Group are disseminated in the normal way through articles in academic journals etc. and in a series of 'Warwick Studies in the Economics of Employment', to be published by Macmillan, of which Economic Change and Employment Policy (1980) is the first study. The MRG also has a Discussion Paper series which represents the results of work in progress circulated for comment prior to publication.

Advisory Committee of the MRG

The CIEBR has an Advisory Board responsible to Senate for assessing the overall academic policy and direction of the Centre.

The MRG has a Steering Committee comprising three members nominated by the Manpower Services Commission, two nominated by the Centre's Advisory Board plus the Director of the MRG. Since 1976, the members of the Steering Committee have been:

Professor G.S. Bain)	
Dr. R.M. Lindley)	University of Warwick
Professor J.R. Perrin)	
Mr. G.L. Reid (Director))	Manpower Intelligence and
Mr. B.E. Rodmell (Chief Economic Adviser))	Planning Division, MSC.
Mrs. M. Venning (Head)		Research, Planning and Statistics, EITB.

The Steering Committee is responsible for operating the procedure for regular review and rolling forward of the five-year budget, subject to the approval of the MSC. The Committee meets twice yearly but its discussions of research plans and progress are supplemented by frequent direct contact between MRG and MSC staff.

Staff of the Institute for Employment ResearchAcademic staff

Director

R.M. Lindley, BSc, MSc (London), PhD (Warwick)

Senior research fellows

D.P.B. Elias, BSc (Manchester), MSc (Sheffield), PhD (California)

J.D. Whitley, BSc, MSc (Southampton)

R.A. Wilson, BA, MA (Warwick)

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G. Briscoe, B. Comm (Birmingham)

- Senior Lecturer, Coventry (Lanchester) Polytechnic

B.G.M. Main, BSc (St. Andrews), MBA, PhD (California)

Administrative and clerical staff

Executive officer

Margaret Birch, BA (Warwick)

Secretaries

Moria M. Fair

Maureen A. Garcia

Clerical research assistants

Frances D. Halstead

Christine Haydon

Christine Winett

Further Information about the MRG

Further details of research in progress, lists of publications and discussion papers and information about forthcoming conferences, workshops etc., organised by the MRG, may be obtained from the Executive Officer, Institute for Employment Research, University of Warwick, Coventry CV4 7AL, United Kingdom.