NEW JOBS IN THE EASTERN BORDERS

An Economic Evaluation of the Development Commission Factory Programme

By: Ian Hodge and Martin Whitby

Agricultural Adjustment Unit, University of Newcastle upon Tyne.

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JOBS IN THE EASTERN BORDERS : AN ECONOMIC EVALUATION OF THE DEVELOPMENT COMMISSION FACTORY PROGRAMME

by

Ian Hodge and Martin Whitby

Research Monograph No. 8
Agricultural Adjustment Unit,
Department of Agricultural Economics
University of Newcastle upon Tyne
September, 1979

This project began in October 1976 and the final report is available for distribution from October 1979. Full details of the calculations carried out and the data collected are recorded in the two hundred and fifty page report.

The report contains details of the ex post evaluation, sponsored by the Development Commission, of its factory programme in the Eastern Borders. Under this programme twenty advance factories have been established in the region since this programme began in 1966. The total direct and indirect employment induced in the region is estimated to be greater than 1000. The capital cost of this project to the Exchequer is estimated at £2¾m; taking account of extra tax revenue and savings in other Exchequer expenditures as a result of the programme the net discounted cost over ten years falls to £1¼m. Discounting the cash flows to the Exchequer over a longer period brings a positive net present value to the Exchequer. The internal rate of return over 25 years just exceeds ten per cent.

A separate evaluation is also carried out in terms of social costs and benefits which take account of the opportunity cost of factors employed by the project, such as unemployed labour, and of the extra services which must be provided as a result of the project. The calculations completed indicate that there is a net social benefit arising from the factory programme when the resulting flows of cost and benefit are discounted over periods as short as ten years.

To : Miss M.G. Skerry
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Monograph 8
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FOREWORD

Economic systems are never static whether as a whole or in their various parts. Small country towns and rural areas are no different in this respect than urban and industrial complexes, except in the degree of changes experienced and in their direction. Thus, the development of industry and commerce in urban centres will effect country towns and rural areas by attracting their population to new jobs and, sometimes, affecting adversely their traditional industries. The question of jobs is, of course, vital in the countryside since their lack leads to the decline of rural communities and their supporting services. It was to deal with these problems that the Development Commission was established in the first decade of this century. The 'development' referred to was that of rural areas which had declined economically and socially during the rapid growth of urban industry in the second half of the nineteenth century and, especially, during the years of agricultural depression in the last quarter of that century.

Revitalizing the countryside is still a central responsibility of the Development Commission. Thus, in 1976 it invited my colleague, Mr. Martin Whitby, to undertake a study of the effect of their 'special investment scheme' in the Eastern Borders, centred on Berwick upon Tweed, on the level of employment and depopulation in that region. With the funds provided Dr. Ian Hodge was appointed in October 1976 as Research Associate on this project. The 'special investment' scheme had been in progress there since 1966 and it was therefore opportune to evaluate the extent to which it had achieved its objectives.

The first year of the study concentrated on collection of data in the area and assessing the financial effectiveness of the programme. This stage led to a first interim report to the

Commissioners in September, 1977. The second stage examined in greater depth some of the issues raised in the first report and conducted a social cost/benefit analysis of the programme leading to a second interim report to the Commissioners in March, 1979.

Since then, the work reported in these two unpublished documents has been consolidated by the authors to produce the present volume. In the outcome, the results support, in retrospect, the policy pursued in the 'special investment scheme'. Of particular importance, however, has been the development of the methodology which can now be applied before similar investment schemes are initiated. In this respect, a further stage of the study is being sponsored by the Development Commission from Kanuary, 1980 to assess the outcome and evaluate the likely effects of such an investment scheme within County Durham.

The preparation of the two previous reports was shared between the two authors, with Mr. Whitby undertaking the main editorial work in preparing this volume. In extension of this work, the authors will also be producing a book in the near future which will seek to specify the general principles underlying the evaluation of rural employment policies.

This study would not have been possible without the financial support of the Development Commission. The University would like to place on record its appreciation for this research grant. Moreover, many individuals and firms in the Eastern Borders gave freely of their time, help and advice. We should like to express our gratitude for this support and hope that this report will lead to a wider understanding of the issues examined.

John Ashton,
Professor of Agricultural Economics,
University of Newcastle upon Tyne.

September, 1979

AUTHORS' ACKNOWLEDGEMENTS

The authors are greatly indebted to Mr. John Reid of the Borders Regional Council, for useful advice and information, to the proprietors, managers and staff of the factories in the Eastern Borders who freely gave their time to supply the raw data on which much of this report is based and to officials of many central and local government departments and agencies for useful advice and information, especially the English Industrial Estates Corporation and the Scottish Development Agency.

We have also benefitted from the advice and assistance of our colleague Mr. K.J. Thomson at several stages in the study. Finally we are grateful to Mrs. H. Campbell who typed the report.

CHAPTER 1

INTRODUCTION

The Eastern Borders, which are defined as the areas of Berwickshire and part of Roxburgh in Scotland and part of North Northumberland in England are remote from any large urban areas. The centre of the region is about 50 miles from Edinburgh and 60 miles from Newcastle upon Tyne (see Figure 1.1), and it is all located within about 25 miles of Berwick upon Tweed.

The area includes part of the Cheviot Hills to the south and the Lammermuir Hills to the north. Between these hills and the coast and along the Tweed valley which runs through the centre of the region, there is a considerable amount of good quality agricultural land. The area provides a number of tourist attractions on both sides of the border. The coast in England has been designated an Area of Outstanding Natural Beauty and the south east corner of the region includes a small part of the Northumbria National Park. Very little of the area is under forestry. Textiles, the industry for which the Border area in general is perhaps best known, is almost exclusively concentrated outside the study area, to the west. The Eastern Borders has traditionally been a rural economy relying on agriculture for its income.

There has been a steady decline in population in the area over a long period, apparently resulting from a decline in the numbers employed in agriculture combined with a lack of alternative employment opportunities. The emigration of the younger, more mobile members of the population has resulted in an imbalanced age and sex structure with a low rate of natural increase. The reduction of employment in the primary sector lowers the demand for services in the area which in turn leads to a reduction of the employment opportunities in this sector. This, then reduces the level of services

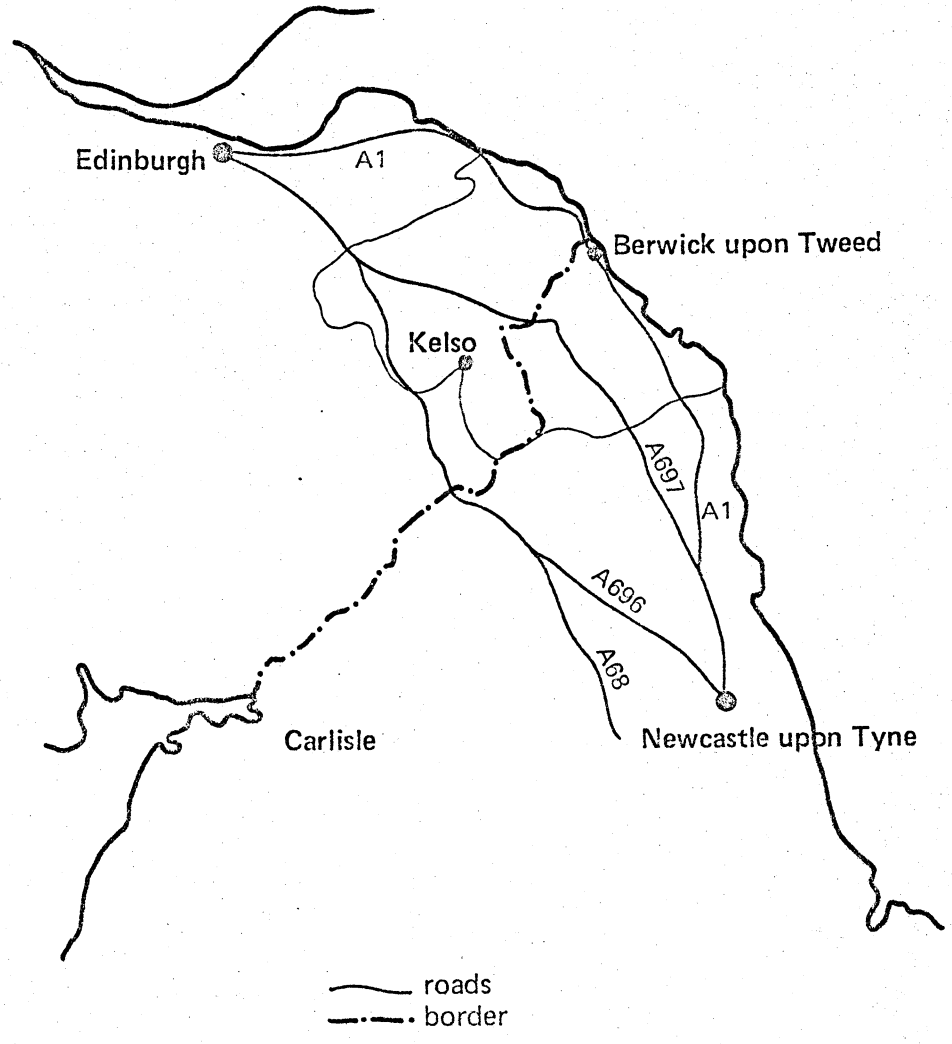

Figure 1.1 LOCATION OF THE EASTERN BORDERS

which is available to those remaining and provides further incentive for emigration.

Eastern Borders Development Association

Recognising the need for an effort to be made to stem the gradual decline in the level of economic activity in the region, coupled with the similarity of problems on both sides of the Border, the Eastern Borders Development Association was established in 1961. The Association's declared object in 1965 (EBDA, 1965) was to

> "assist the sound economic development of the area in the interests of the wellbeing of its people. Apart from dealing with business enquiries and the promotion of tourism, its efforts have so far mainly directed towards securing recognition for the homogeneity of the region, publicising the need to treat depopulation as meriting the same concern and help as unemployment, and bringing together agencies and people from both sides of the Border to achieve a common purpose."

The membership included both local authorities and private members, with approximately half its income being provided by local authority contributions and half from private members' subscriptions.

In 1966, the Government published a plan for the development of the Scottish economy (Scottish Office, 1966). This included a number of regional studies, one of which covered the Borders. This highlighted the essential distinction between the Eastern and the Western Areas, and revealed that in both, depopulation had produced much more serious and advanced problems than in any other of the areas on Scotland which were examined. The report considered that there was a case for ensuring that Berwick upon Tweed could itself retain a sufficient level of population and vitality to go on functioning as an important service centre efficiently. "The development of a growing source of employment on a sufficient scale to counteract and reduce continuing losses of population would be the main objective of such a policy." Any new industrial growth would have to be accompanied by a deliberate policy of housing and population expansion and mobilise

the full travel to work potential of its labour catchment area. It was also stated that the Development Commission had in mind the establishment of a programme of concentrated assistance and development in co-operation with local authorities and a local development association. While it was expected that in its early stages, development would be focussed in Berwick upon Tweed, the aim of the programme would be to benefit the area as a whole and to ensure that expansion at any one point would have a revitalising effect on the surrounding districts.

As it was felt that female labour in the area was then scarce, it was necessary to attract new industrial enterprises which would offer additional job opportunities for males.

On the basis of the proposals made by the Development Commission it was decided that a scheme should be administered locally by a Development Committee. This should be established within the framework of the existing Eastern Borders Development Association. The committee should include representatives both of the local authorities and of local trade and commerce. A development officer and clerical assistant should be appointed. One half of the administrative expenses would be met by the Development Commission, the remainder being guaranteed by the local authorities.

This scheme represented the second of the Development Commission's schemes in "special investment areas" or "trigger areas". The methods and criteria for selecting these areas were set out in the Development Commissioners 33rd Report (Development Commission, 1973). The areas selected were those where depopulation was the main problem but where there were also good prospects of recovery and growth. Further details of the Commission's activities in these areas are given in the 34th Report of the Development Commission (Development Commission, 1976). Since the establishment of the Development Committee in 1966 a number of advance factories have been constructed in Berwick and other centres in the area (see Figure 1.2). These currently provide employment for approximately 790 people. Other

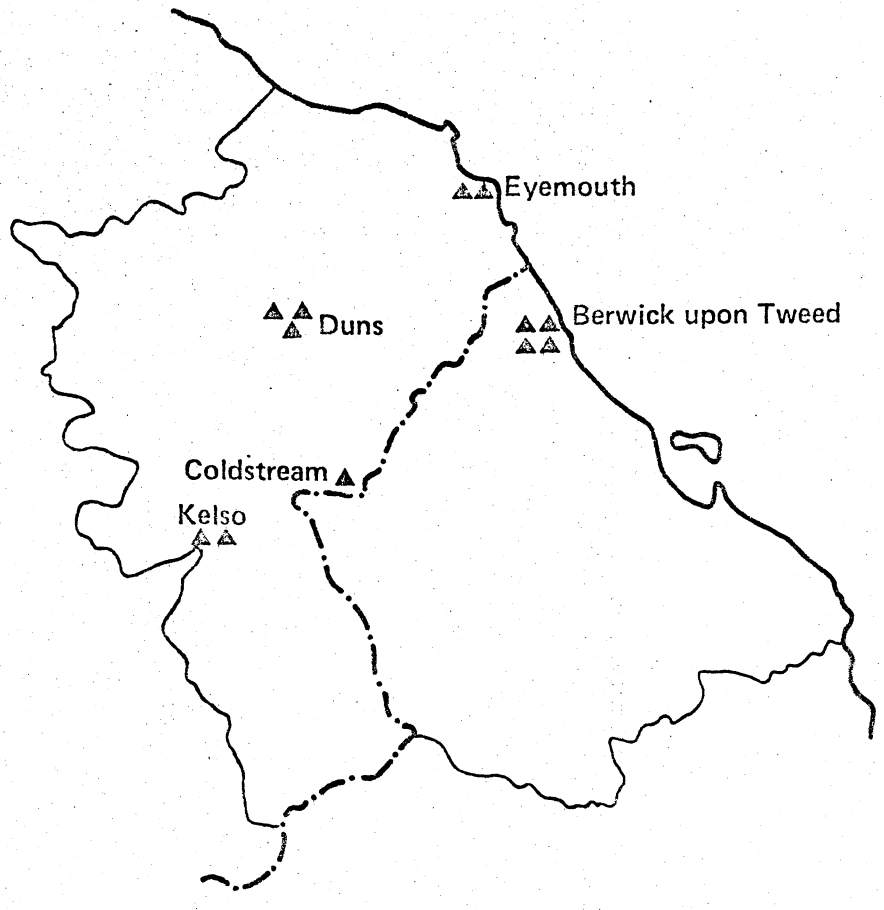

Figure 1.2 LOCATION OF DEVELOPMENT COMMISSION FACTORIES
(occupied May 1977)

efforts to encourage local development such as encouraging other industries to establish in the area and guaranteeing housing for incoming workers have also been made.

In January 1969 it was agreed that the provision of Development Commission factories within the Eastern Borders at Wooler, Belford and Seahouses, as part of a development scheme for rural Northumberland should be the responsibility of the Community Council of Northumberland. However, due to difficulties in finding suitable sites for factory development in the area, no factories have been completed which may be included in this study.

In November 1975, the Development Committee of the Eastern Borders Development Association was dissolved, and responsibility for its work in Scotland was passed on to the Borders Regional Council in association with the Scottish Development Agency. The responsibility for developments in Berwick was taken over by the Northumberland Rural Industrial Development Committee. In order to co-ordinate the work being continued on either side of the Border a new Eastern Borders Consultative Committee was established.

Government Regional Policy

Throughout the operation of the scheme in the Eastern Borders, the area has been classified as a Development area for the purposes of Government Regional Policy. The area gained this status under the Industrial Development Act, 1966. Under this Act, manufacturing industry was eligible for 25 per cent building grants and 40 per cent investment grants on plant and machinery (O.E.C.D., 1976). Other more general loans and grants were also provided to establishing or expanding firms as well as assistance for the training and movement of labour. In 1967 a Regional Employment Premium (R.E.P.) was introduced. This was payable at a rate of £1.50 per week for male employees and lower rates for females and young persons. For a short time, Selective Employment Premium was also paid to manufacturing industries in the Development Areas and this amounted to 37½p per week per adult

male. Between 1970 and 1972, the Investment Grant System was discontinued and replaced by expenditure on plant and machinery being allowed to be written-off immediately. However, in 1972 Regional Development Grants were instituted and paid at a rate of 20 per cent in Development Areas on qualifying investment on plant, machinery and buildings.

The Industry Act 1972 replaced the loan and general purpose grants by selective financial assistance. For employment-creating projects, the assistance could take the form of loans at concessionary rates of interest, interest relief grants or removal grants.

These schemes of Regional Development Grants and Selective Financial Assistance are still in operation. Since 1st January 1977, R.E.P. has ceased to be payable for those in employment in Great Britain. Details of the current position are provided by the Department of Industry (1976). One further alteration has been made to the administration of Regional Development Grants. Applications for grants which are received after 31 March 1977, after confirmation of the eligibility and the amount, payment of the grant will be deferred for three months. (Explanatory Memorandum by the Secretary of State for Industry, 5 August 1976).

The developments in the Eastern Borders need to be viewed in the light of the incentives which are available through Government Regional Policy. Nevertheless, it must be recognised that, in considering an area's ability to attract migrant industry, it is an area's attraction, relative to other areas which is important. Thus it is significant to note that Government incentives are provided for industry in a large area of the United Kingdom which includes nearly the whole of upland Britain.

Settlement Policies

Berwick upon Tweed is the largest settlement in the area and the most important centre of service provision. The importance of Berwick was noted in the plan for the Scottish Economy and by the Northern

Economic Planning Council (1966). The other largest settlements are Kelso to the West and Eyemouth to the North. Policies for the location of growth within the area have been proposed by the respective local authorities (Northumberland County Council, 1969; Berwickshire County Council, 1972; Roxburgh County Council 1970/71). These have classified settlements on the basis of their suitability for expansion. All these policies are aimed at concentrating growth in the larger settlements and holding or increasing the local population.

The Development Commission has provided factories in the larger settlements, Berwick upon Tweed, Kelso, Eyemouth, Duns and Coldstream. They are also being constructed in Belford, Seahouses and Wooler in Northumberland. Outside these areas, local authority factory building has been carried out in Earlston and Chirnside.

TABLE 1.1 - Past and Projected Populations of Settlements in the Eastern Borders.

Berwickshire	1971 population	1981 target population
Eyemouth	2570	3000
Duns	1810	2000
Coldstream	1320	1800
Earlston	1450	1600
Chirnside	980	1400
Lauder	620	750
Remainder of County:	4800	5710
Northumberland	**1971 population**	**Optimistic forecast for 1981 from 1965 population**
Berwick M.B.	11647	14480
Belford R.D.	4611	5600
Glendale R.D.	6073	6650
Norham & Islandshires R.D.	3452	3430
Roxburgh		**Projected for 1985**
Kelso S.B.	4852	8000

SOURCES : Northumberland County Council (1969), Policy for Growth and Concentration.

Berwickshire County Council (1972), A Rural Policy for Berwickshire.

Roxburgh County Council (1972), Burgh of Kelso, Policy Statement.

Administration Areas in the Eastern Borders

The most significant boundary which passes through the Eastern Borders is obviously the English/Scottish Border. This draws a firm line between nearly all administrative functions and has created some problems as regards collecting statistics which apply to the area, in that the relevant data are never available from one source, and that in some instances, the basis upon which they are collected is not the same.

Perhaps the next most difficult problem has resulted from local government re-organisation which took place on 1st April 1974 in England and on 16th May 1975 in Scotland. The area in Scotland prior to re-organisation included all of the county of Berwickshire and part of Roxburghshire. Berwickshire was divided into four small burghs and three rural districts. In Roxburghshire, one small burgh and one rural district were included in the Eastern Borders. Since re-organisation, Berwickshire and Roxburghshire have become districts within the Borders Region. In England the area included the Metropolitan Borough of Berwick upon Tweed and three rural districts. These have been amalgamated into the Borough of Berwick upon Tweed. Details of these changes are shown in Appendix I.

The Employment Exchange Areas do not coincide with the boundaries of the Eastern Borders Development Association, and details of these areas are shown in Appendix I.

Because of these complications, many of the statistics used, while they may show the trends which have been taking place in the area, do not necessarily represent actual numbers in the Eastern Borders area, as originally defined. Care has been taken to indicate the areas to which statistics apply, when they are quoted.

Data and Assumptions

The lack of detailed statistics relating to the Eastern Borders has meant that the approach in this study has been to start at the level of the factories and to extrapolate from these to the total impact of the Development Commission programme on the local economy and population. Two changes in the official statistics which have taken place during the period being surveyed have further reduced the value of available data. Since Local Government Re-organisation, population statistics are only available at the District level, so that no estimates are now available of total population in the area as Roxburgh District and Ettrick and Lauderdale District are partly within and partly without the Eastern Borders. Secondly since 1972 detailed employment statistics are no longer provided as a result of the withdrawal of the insurance cards from which these statistics were compiled.

This survey must therefore rely to a large extent on the data collected from the factories themselves. Surveys were carried out of the managers of the factories and of the employees. It was not possible to visit two of the factories, and so it has been necessary to make estimates for these on the basis of available information. From the data collected, the total impact of the factory programme in the area has been estimated on the basis of a local multiplier which has been calculated.

These results were used in order to estimate the returns which accrue to the Exchequer, and these returns have been compared with outlays made by the Exchequer. In order to assess the contribution made by the Development Commission, it is necessary to consider what the situation would have been in the absence of Development Commission activities in the area. Adequate data were not available to allow the use of regional statistics for this purpose and the assumptions made have been based on the replies given by factory managers and employees. It must be remembered that the conclusions reached will depend very greatly on these assumptions.

While it has proved possible to provide quantitative assessments of the Development Commission's factory programme, the contributions which have been made to the local economy by means of other activities must remain largely qualitative. These activities are considered later in the report.

Mid-Wales Study

This study of the Eastern Borders is the second to be sponsored by the Development Commission of their 'special investment' projects. The previous study was carried out in Mid-Wales in 1969/70 (Development Commission, 1972).

They found that the factories constructed by the Development Commission employed 2,007 workers directly or indirectly and were estimated to have sustained 4104 people. Altogether, the factories were estimated to have retained in Mid-Wales 2973 people who would otherwise have left the area which reduced the decline of population in Mid-Wales between 1961 and 1969 from a total of 4.3 per cent to 2.7 per cent. The Exchequer expenditure in financing the eighteen occupied Development Commission factories amounted to £876 per job provided directly in the factories. Estimates of the annual returns to the Exchequer, using discounted cash flow techniques, ranged between 27.6 per cent and 30.9 per cent, depending upon the assumptions.

Chapters 5 to 7 in this report essentially repeat the calculations of the Mid-Wales report, which thus provided a useful methodological starting point. In some parts of this study it has been possible to assemble more information than was available for Mid-Wales and, to the extent that it was accurate, the results here will be more precise. Because of differences in information sources and, occasionally, in methodology the Mid-Wales results are not precisely comparable with those presented here. Thus differences between the two reports (discussed in Chapter 7) are not solely attributable to differences between the two regions and in the effectiveness with which the policies have been pursued.

The report then goes further, into the problems of social costs and benefits, whereas the Mid-Wales study was confined to financial effects. This broader approach is more complicated and more time-consuming than concentrating on financial effects, but it is judged to be more rewarding than financial appraisal in the measurement of the effects of policies.

Ex post and Ex ante appraisal

This study relates to a policy decision taken and implemented over ten years ago. It is therefore essentially historical in approach, looking at a decision from an *ex post* position. However, the purpose of such studies is obviously to offer guidance for future possible decisions in similar areas. If the results of this study were to be extrapolated to another context in that way they might seriously mislead if the success or failure of this project resulted from some factors external to the area in which it was carried out. It should also be noted that, because of the *ex post* nature of the study, only limited inferences can be drawn as to the appropriateness of the EBDA project at the time it was initiated. More could be said about it if the project had been preceded by a thorough *ex ante* analysis of the expected outcome. In the absence of such an appraisal the present study takes on explicitly *ex post* approach, freely evaluating the EBDA project with the wisdon of hindsight but recognizing that only limited conclusions can be reached as to whether the initial decision under consideration showed proper foresight.

An Outline of the Report

The sequence in which material is presented in this report is broadly from demographic and other physical information about the development programme through financial aspects of it to an economic evaluation of development. Broadly Chapters 2-4 and 6 deal with the first type of material, Chapters 5, 7 and 8 present financial material and Chapter 9 deals with an economic assessment of the factory programme. After that, two further chapters deal with special

information. First, Chapter 10 covers some important developments in the Eastern Borders which have taken place outside the Development Commission factory programme. Second, in Chapter 11, the results of a final survey of new factory tenants, who had moved into their factories whilst this research was in progress are presented. Chapter 11 is important because the new factory tenants were different in significant ways from the tenants of the original twelve factories. In fact the information in Chapter 11 has been incorporated in the estimates in Chapters 7 and 9 so that it may be important to refer to Chapter 11 in conjunction with those earlier chapters. Finally, Chapter 12 presents a brief summary of the report and discusses its main conclusions. The chapter concludes by reviewing the evidence presented on four main questions which have arisen during the course of the work.

The Timetable of Research

This study began in October 1976 and the analysis it contains was finally completed in March 1979. Most of the data were collected in the first twelve months of the study and most of it relates to the year 1977. Where financial and economic data is used it has, as far as possible, been converted to or collected from the year 1976 unless otherwise stated this is true throughout the report. Where conversions to the 1976 price level have been made the method used is indicated in the text.

Because the research took place during an extended period two reports were prepared for the Development Commission, the first was submitted in the Autumn of 1977 and the second in the spring of 1979. This present volume is an amalgum of the two reports incorporating virtually all of the material of the second report and most of the first report. The sections of the first report which have been dispensed with are those which were revised, in the light of further information, in the second report.

A second consequence of the duration of this study has been that while it was under way, in fact after the terms of reference had been agreed and the first report produced, the ground rules for public sector evaluation were changed. In particular, the White Paper on nationalised industries in 1978 preceded the formal abandonment of the ten per cent Test Discount Rate which had generally been used in public sector project appraisal for some years. The announcement of this change of policy was made in Parliament on April 5th 1978 by Mr. Joel Barnett. Now the discount rate used is between five and seven per cent for projects such as this. This change of policy poses a dilemma. Should the calculations in the earlier parts of this study be re-worked using the new discount rate, or should the last calculation in the work adhere to the old TDR on the grounds that it is more worthwhile to maintain consistency throughout this report and between this study and previous ones? In the event the latter policy has been pursued here and a central discount rate of ten per cent has been used. Nevertheless discount rates on either side of this have been used in Chapter 9 where social costs and benefits are estimated by keeping the options open, in this way comparability between this study and others is ensured and this seems a more appropriate approach in an ex post appraisal such as this. It also has the virtue that changes in the direction of using high discount rates will not render the findings here irrelevant. Since the cash flows which are discounted are presented in full in the Appendices to this report those who wish to re-calculate present values using some other discount rate will find it easy to do so.

CHAPTER 2

DEMOGRAPHIC AND ECONOMIC CHANGE IN THE EASTERN BORDERS

In this chapter the available evidence on demographic and economic change in the Eastern Borders is summarised. The chapter deals first with demographic change, based largely on the population census and the Registrar General's reports. The second part of the chapter deals with the development of the labour market in the Eastern Borders drawing data from a wider range of sources.

Demographic Change

This section begins by reviewing the longer term changes in population in the Eastern Borders. Then changes in the age distribution of the regional population are analysed. The same data are then assembled as cohorts to produce estimates of net migration within the region and between it and the rest of the country. The components of natural change in the regions are then analysed, yielding further estimates of net migration and the recent data on gross migration are summarised. Finally some independent projections of population in the region are recorded.

Long Term Population Change

The total population in the Eastern Borders has been declining continually for more than a century. In 1951 the population amounted to about 70 per cent of the population in 1851 and by 1971 the percentage had fallen further to 60 per cent. However, towards the end of this period the net decline for the whole area began to slow down and there was even a net increase in some districts. These changes are summarised in Table 2.1; further detail is presented in Appendix 2.

TABLE 2.1 - Net Population Change in the Eastern Borders, 1951-1974

	1951	1961	1971	1974
Eastern Borders				
Population	63,590	58,656	54,850	55,668
Net change on previous entry:				
- number	-	-4,934	-3,806	+818
- per cent	-	-7.76	-6.49	+1.49
Four Increasing Districts				
Population	8,306	7,952	8,660	9,820
Net change on previous entry:				
- number	-	-354	+708	+1160
- per cent	-	-4.26	+8.90	+13.39
Eastern Borders Minus Increasing Districts				
Population	55,284	50,704	46,190	45,848
Net change on previous entry:				
- number	-	4,580	-4,514	-342
- per cent	-	-8.28	-8.9	-0.74

SOURCES : 1951-71, Population Census.
1974, Registrar General's Annual Report.

NOTE : The four increasing districts were Coldstream, Eyemouth, Lauder and Kelso Small Burghs.

The table shows the fall in the rate of decline between 1951-61 and 1961-71 which was followed by a small increase from 1971-1974. The 1974 data are taken from the Registrar General's mid-year estimates and are thus not necessarily consistent with the earlier data. Four

districts showed an increase from 1961-71 and the aggregate change in their population for the period is recorded next. These four districts showed a substantially slower decline than the total population in 1951-61 and a much greater increase in 1971-74. The remainder of the Eastern Borders showed a sustained though reducing rate of decline in numbers over the period.

The four increasing districts were chosen to illustrate the range of variation within the Eastern Borders. However a more familiar distinction in examining demographic decline is that between urban and rural areas. For the purpose of this chapter urban and rural areas are defined as in the population census; that is the urban population is taken to reside in the Borough of Berwick, the Small Burghs of Coldstream, Eyemouth, Lauder and Kelso and, in Northumberland, Belford, North Sunderland and Seahouses. Inclusion of the last three towns in the urban group raises problems in that the population census includes them with the totals of the rural districts of Belford, Glendale and Noram and Islandshires. As these towns are at least as urban as many of the Scottish small burghs it was thought worth estimating age distribution data for them separately. Total male and female populations were available for the three towns. These were assumed to be distributed by age in the same way as the rest of the urban population of the region. The numbers in each age group were deducted from those in the rural districts and added to the urban districts. This procedure was followed for the population census years of 1951, 1961 and 1971. In later sections of the report it has not been possible to separate out the three Northumberland towns from the rural data and, under those circumstances the words "urban" and "rural" have been put in quotes.

The data in Table 2.2 summarises the trend over 1951-71. Whilst the urban population stayed nearly constant, a decline in the first decade being more than made good by an increase in the second decade, the rural population declined steeply. Thus the proportion of total population designated as rural fell to just over half in 1971. In the second decade there has been a reduction in the overall rate of loss of population from 7.8 per cent to 6.5 per cent. Although some stress

has been laid on the differences between urban and rural parts of the Eastern Borders it must also be acknowledged that the area would rate as highly rural in comparison with much of the rest of Britain.

TABLE 2.2 - Urban and Rural Population Change in the Eastern Borders 1951-1971.

	1951	1961	1971
Total urban population	27,150	26,638	27,197
Total rural population	36,670	32,018	27,653
Distribution, per cent,			
- urban	42.7	45.4	49.6
- rural	57.3	54.6	50.4
Inter-censal rate of change, per cent,			
- urban	-	-1.9	+2.1
- rural	-	12.1	-13.6
- total	-	7.8	-6.5

SOURCE : Population Census

Age distribution

To look behind the broad trends of net demographic change it is necessary to examine the changes in age structure of the urban and rural population. This enables some tentative conclusions to be drawn about the causes of population change in the region. Full details of the estimated age distribution of the population are presented in Appendix 2. The general situation is summarized in Figures 2.1a and 2.1b. In these Figures the distributions have been combined to cover four age intervals 0-24, 25-54, 55-74 and over 75. The urban distribution is represented by a solid line and the rural distribution by a broken line. The distribution at each successive census has been shifted one inch to be compared without confusion. The horizontal axis thus bears the ages in the 1951 census.

In Figure 2.1a the distributions of males are presented and a number of general points are brought out. First, the general improvement in life expectations is indicated by the way in which the curves flatten out and fall increasingly steeply as we move across the censuses. Second, in each census young people (under 25) are more evident in urban than in rural areas and the rural population has more older men (over 54). Third, these differences in age structure between the urban and the rural areas appear to have increased over time, so that the gaps between the proportions of younger and older workers can be seen to have widened. The Figure suggests, but does not prove, that this difference could arise because young men leaving the rural areas in the 1960s were likely to move to towns in the Eastern Borders rather than leaving the region entirely as they apparently did in the 1950s.

Figure 2.1b is remarkably similar to 2.1a in the general tendencies it indicates. Comparing the two Figures underlines the effect of the general tendency for women to live longer than men in the flatter female age distributions at each census.

A more detailed impression of the process of population change can be gained by re-arranging the data in the form of cohorts. A cohort is a sub-group of people born within a stated period and their progress can be followed through a series of population censuses by examining the group ten years older at each successive census. If the cohorts are related to decennial birth periods then there will be eighteen different cohorts present in a population at a point in time. In the Eastern Borders, because we are interested in urban and rural difference we may specify thirty-six cohorts. The size of these cohorts, over the period 1951-71 is graphed in Figure 2.2.

Each section of the graph contains four separate lines, which represent urban and rural, males and females. Unlike Figures 2.1a and 2.1b the numbers here are absolute. Looking first at general tendencies we note that virtually all of the cohorts are diminishing in size throughout the period. (The apparent steep increase in the

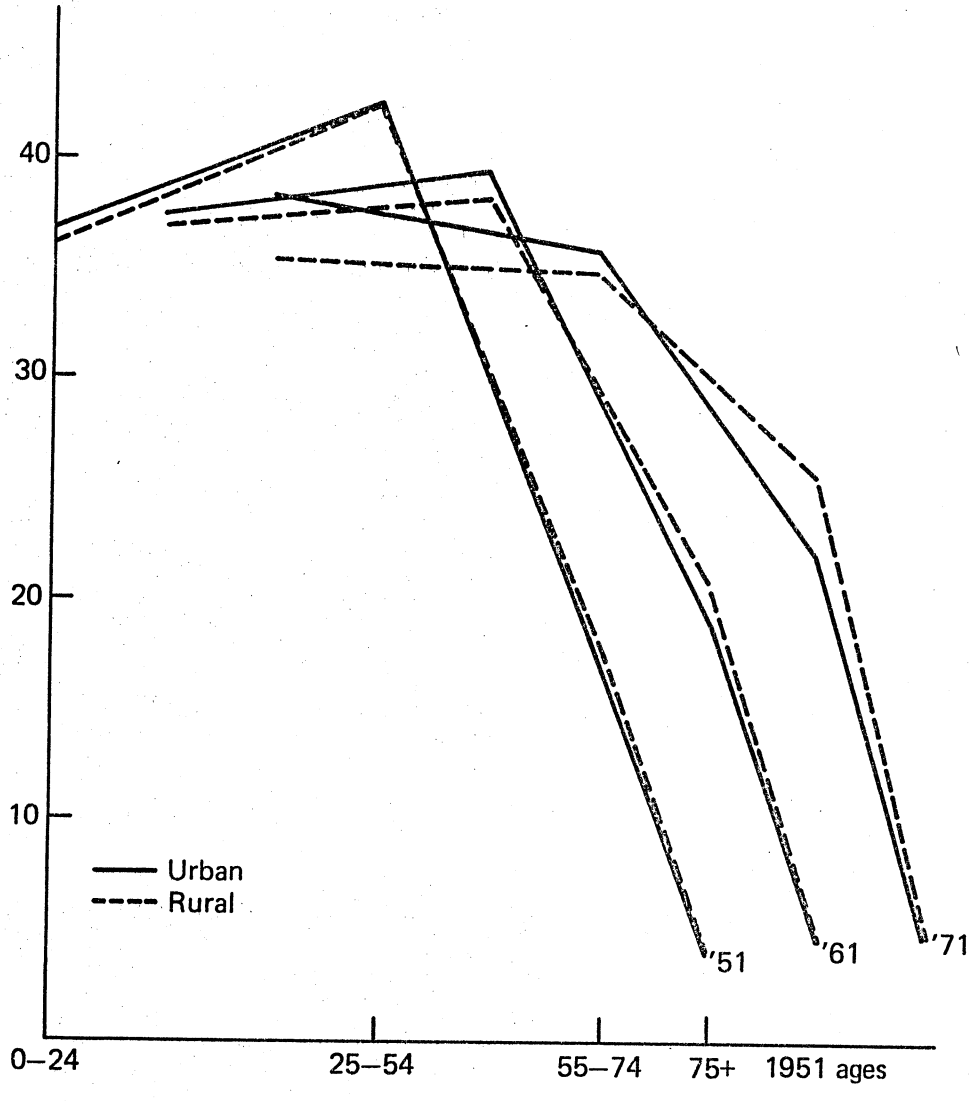

Figure 2.1(a) PERCENT AGE DISTRIBUTION, MALES 1951–71

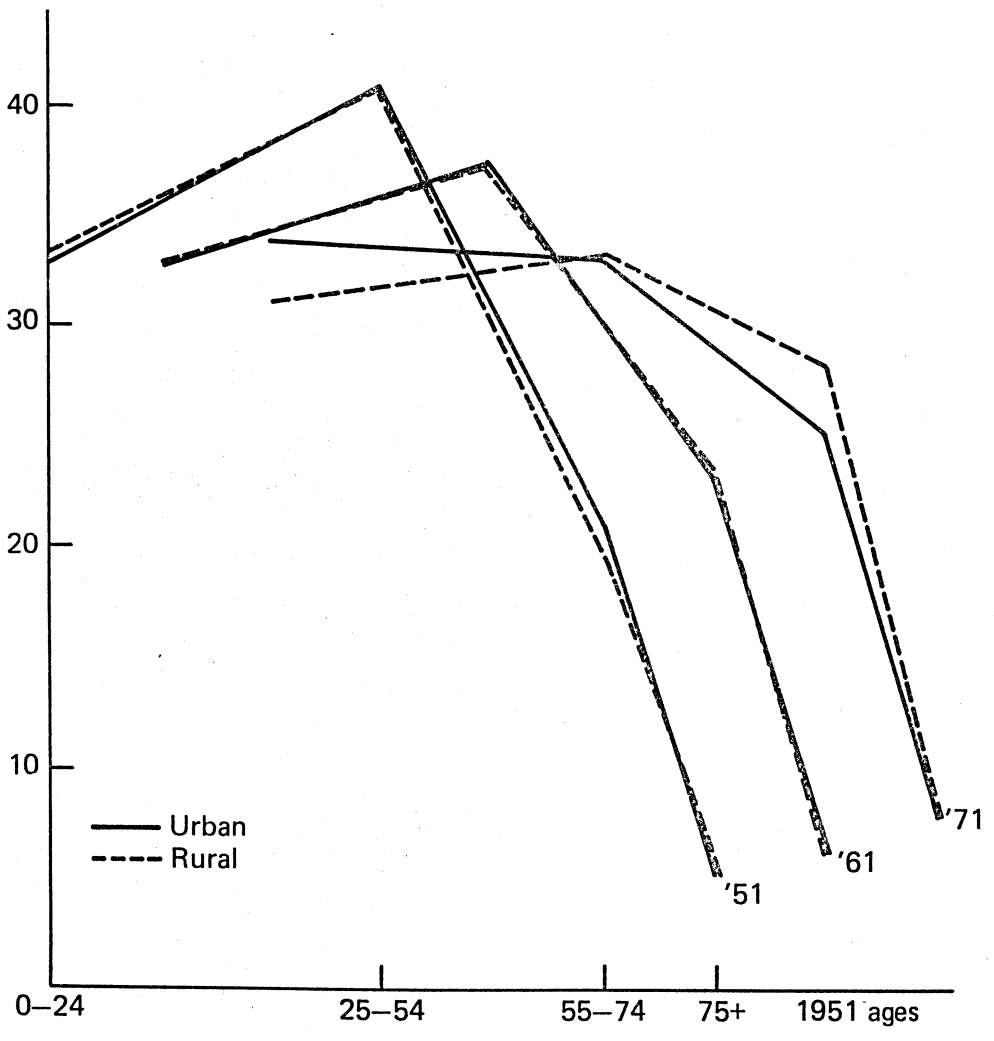

Figure 2.1(b) PERCENT AGE DISTRIBUTION, FEMALES 1951–71

youngest cohorts is partly because the first age group from which they were calculated (0-4) contained only half the births for a decade.) However, the cause of decline in cohort size varies over the age range. Amongst the older cohorts, on the right, death is clearly a major cause of decline. Indeed the increasing steepness of decline in the oldest four groups of cohorts is probably entirely attributable to death. By contrast the decline in younger cohorts, particularly the rural ones, is mainly attributable to net migration. Full details of the changing cohorts are presented in Appendix 2. Here we summarise the situation portrayed in Figure 2.2 numerically in Table 2.3.

In this table cohorts have been grouped for ease of presentation. The first row of the table includes cohorts which are increasing due to births. The next two rows represent cohorts which are declining mainly due to net migration and the decline in the final row is accounted for mainly by death. A possibly important source of error, which limits the use of such calculations in measuring migration is that individuals may enter and leave a cohort between censuses or some of those leaving may not be detected because they are replaced by persons in the same age group between censuses. The size of such effects cannot be estimated from the available data but they are taken to be relatively unimportant.

The four periods covered in Table 2.3 represent birth and childhood, young adulthood, maturity and old age. Evidently migration is particularly important in the two central stages and here the urban-rural differences are important as are the differences between the two periods. For both men and women there is a much higher rate of net loss of population from rural than from urban areas in both decades. Moreover, for rural males and females there was no reduction in outflow of young adults in the second decade although this is evident for urban males and females. For older adults there was a sharp reduction in the rate of migration in the second decade for both urban and rural residents. It would be tempting to conclude that the net reduction in the number of younger urban outmigrants in the second decade arose because the stream of rural outmigrants who, in the earlier decade had left the region, were in the second decade persuaded to stay in the small towns. However this can be no more than a hypothesis until more direct evidence can be produced on the origins and destinations of migrants.

TABLE 2.3 - Inter-Censal Net Cohort Change by Broad Age Groups 1951-1971.

Numbers

Age in first census	Males				Females				Males & Females	
	Urban		Rural		Urban		Rural			
	1951-61	1961-71	1951-61	1961-71	1951-61	1961-71	1951-61	1961-71	1951-61	1961-71
0 - 14	+ 1945	+ 2077	+ 2312	+ 1837	+ 1911	+ 2072	+ 2130	+ 1753	+ 8298	+ 7739
15 - 44	- 641	- 355*	- 1664	- 1686	- 659	- 299	- 1431	- 1557	- 4395	- 3897
45 - 64	- 324	- 241	- 950	- 573	- 150	- 73	- 705	- 414	- 2129	- 1301
65 +	- 1184	- 1191	- 1929	- 1772	- 1406	- 1425	- 2183	- 1974	- 6702	- 6362
Total										
Net increase	+ 1945	+ 2163	+ 2312	+ 1837	+ 1911	+ 2072	+ 2130	+ 1753	+ 8298	+ 7825*
Net decline	- 249	- 1873	- 4543	- 4031	- 2215	- 1797	- 4319	- 3945	-13226	-11646
Net Change	- 204	+ 290	- 2231	- 2194	- 304	+ 275	- 2189	- 2192	- 4928	- 4371

* Because of a small net increase (of 86) in two of the three cohorts here the negative items in this column do not sum to the appropriate total at the bottom. See Appendix 2 for full details.

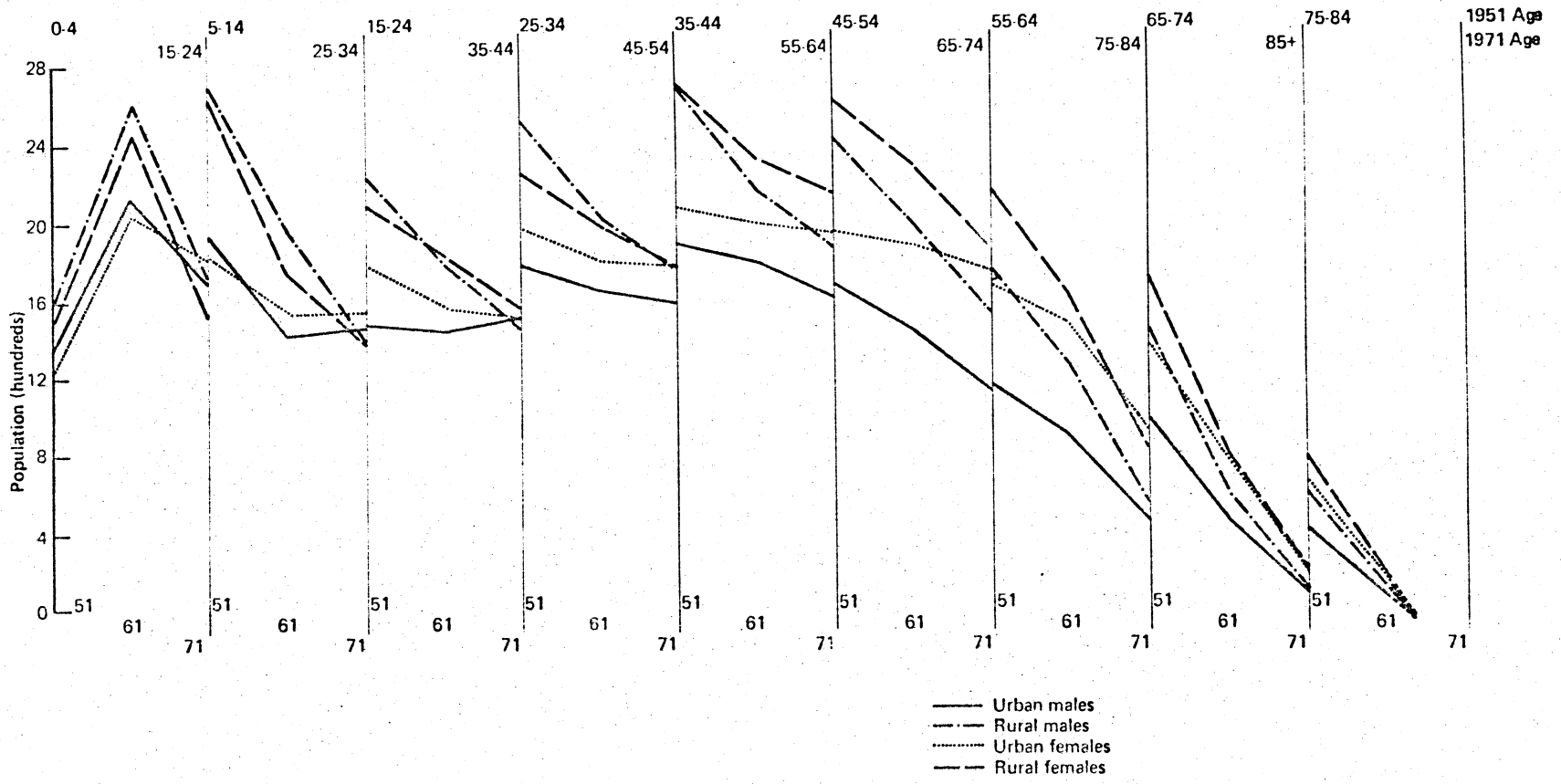

Figure 2.2 INTER-CENSAL COHORT CHANGE, 1951–71

Natural change

Data on natural change enable calculation of net migration from opening and closing population size. Population in year 10 will equal population in year 0 plus births, minus deaths and minus net migration. This identity allows calculation of net migration from districts in the Eastern Borders. The calculations are presented in Table 2.4.

TABLE 2.4 - Natural Change and Net Migration, 1961-1971.

	1961 Population (1)	1961-1971* Births (2)	Deaths (3)	1971 Population (4)	1961-71 net migration (3) + (4) -(1) - (2)
Coldstream	1226	221	257	1278	+ 88
Duns	1837	288	293	1768	- 64
Eyemouth	2161	370	305	2530	+ 304
Lauder	597	66	112	604	+ 53
Kelso SB	3968	632	632	4852	+ 884
Berwick upon Tweed	12178	2421	1886	11647	-1066
"Urban"	21967	3998	3485	22679	+ 199
Berwick, Landward	16616	2250	2154	14599	-2113
Kelso District**	4171	672	520	3436	- 887
Belford RD	5004	601	734	4611	- 260
Glendale RD	7031	757	820	6073	- 895
Noram & Islandshires RD	3867	428	450	3452	- 393
"Rural"	36689	4708	4678	32171	-4548
TOTAL	58656	8706	8163	54850	-4349

SOURCE : Population Censuses 1961 and 1971 and Registrar General's Annual Reports.

* 1961-1970 inclusive.

** 1961 not available, estimated as average of 1962, 1963 and 1964.

Rates of natural change per 1,000 base population may be calculated as in Table 2.5. First crude birth and death rates are calculated as total births or deaths per 1,000 initial population. However this calculation ignores important differences in age structure of the population in the two areas. This may be roughly brought into account by expressing births per thousand women of childbearing age in the initial population and expressing deaths per thousand of initial population in the older age ranges. These rough calculations confirm that the "rural" areas have lower fertility and mortality rates than "urban" areas. Thus the differences between "urban" and "rural" rates of natural change implied by the crude calculations does not disappear when they are roughly corrected to allow for differences in age structure. However, the relative position is indicated in the final column of Table 2.5 where the urban birth and death rates are expressed as a ratio of the rural ones. This indicates that the attempt to allow for differences in age structure does remove some of the urban/rural disparity in birth rates but leaves the relative death rates unchanged.

TABLE 2.5 - Rates of Natural Change, 1961-71

	"Urban"	"Rural"	Total	Urban/ Rural
Births per 1,000 1961 population	182	128	148	1.42
Deaths per 1,000 1961 population	159	128	139	1.24
Births per 1,000 initial female population aged 15-44	987	736	833	1.34
Deaths per 1,000 initial population aged 55 and over	592	466	512	1.27

SOURCE : Table 2.4 and Appendix Table A2.4

Such urban-rural differences would be consistent with a tendency for young couples moving from "rural" to "urban" areas before starting a family. Similarly it suggests that the old and infirm are more likely to live in "urban" areas. However, it must be remembered that the rates discussed here are "uncorrected" and the differences they exhibit would not be typical of urban/rural differences.

Gross migration

The evidence on migration presented so far in this chapter has been indirect, relying upon various methods of estimating migratory flows. Such methods are imprecise and usually understate the full flow of migration. However, the population census does obtain sample information on the number of people who have moved during the five years preceding the census date and that information has been assembled as the basis for this section.

There are two reservations about the usefulness of these data. First the question is only addressed to those actually resident in the United Kingdom on the census day. Hence those who have emigrated to other countries will not be recorded as migrants. Secondly the census returns are sampled, using a ten per cent sampling fraction, which introduces a further possibility of error which grows in importance as the size of the population unit under consideration decreases. According to the O.P.C.S. (1974), the standard error of an estimated 100 migrants and 10,000 migrants would be approximately $\sqrt{100 \times 0.9}$ and $\sqrt{10000 \times 0.9}$ i.e. approximately 9.5 and 95 respectively. So we can be 95 per cent confident that the true values lie between 80 and 120, and 9,800 and 10,200 respectively.

Such sampling errors are, of course, only part of the possible error in migration data and some of the other possibilities arising mainly from incorrect completion of returns are currently under investigation.

The process of migration must be defined in relation to both origin and destination, and the census collects data from individuals at their destination. In order to simplify the presentation the large number of possible origins of in-migrants and destinations of out-migrants must be grouped. In Table 2.6 we have accordingly presented data on moves between the following regions:

within the Eastern Borders - urban and urban areas
urban and rural areas
rural and urban areas
rural and rural areas

and, into or out of the Eastern Borders - into urban areas
into rural areas
from urban areas
from rural areas

in the rest of Great Britain.

TABLE 2.6 - Gross Migration within the Eastern Borders and to and from the rest of Great Britain, 1966-71.

From :	"Urban" EBDA	"Rural" EBDA	Rest of G.B.	Total
"Urban" EBDA	240	440	2220	2900
"Rural" EBDA	1200	1250	5190	7640
Rest of G.B.	1980	4520	-	6500
Total	3420	6210	7410	17040

SOURCE : Population Census, 1971, Migration Tables.

A rough check on the migration data may be obtained by comparing the net flows indicated with those obtained from cohort and natural change calculations. The comparison is presented in Table 2.7.

As indicated earlier both the cohort estimates and those based on natural change would tend to understate the full flow of migrants. Given this tendency and the difference in time periods to which they relate there is reasonable agreement between the three sources. We conclude, therefore that migration out of the Eastern Borders has been dominated by a rapid exodus from rural areas. Some of these rural migrants have moved to urban districts within the area but the majority have moved outside the area in the period 1961-1971.

TABLE 2.7 - Net Migration, Eastern Borders, Comparison of Estimates.

	1961-71		1966-71
	Cohort Net Change	Natural Change Estimates	Census Migration Sample Estimates
Net migration into:			
Urban EBDA	+ 565	+ 199	+ 520
Rural EBDA	- 4836	- 4548	- 1430
Rest of G.B.	+ 4371	+ 4349	+ 910

NOTES : 1. Signs indicate direction of net flow.

2. The cohort estimates are based on a more precisely rural definition of rural areas than the other estimates in this table.

Change After 1971

From the point of view of this study the period after 1971 is of great interest, but unfortunately the data relating to it are both less reliable and less detailed than the material so far presented. In this section the information from the Registrar General's Annual Reports is analysed and the projections prepared by the Local Authorities in the Eastern Borders are presented.

The processes of natural change and net migration are summarised in Table 2.8, from the Registrar General's data. This table indicates continuation of the modest expansion of population detected in the 1960s. However, because there has been a fall in both urban and rural birth rates and some increase in rural death rates (compare Tables 2.9 and 2.5), this has been achieved by substantial net migration.

This net in-migration amounted to 1162 people over the three years and a substantial amount of the movement (506) was to "rural" areas. This last finding represents a reversal of the trend of migration observed earlier in Table 2.7.

TABLE 2.8 - Natural Change and Net Migration, 1971-74.

	1971 Population (1)	1971-1973 Births (2)	1971-1973 Deaths (3)	1974 Population (4)	1971-74 net migration (4) + (3) -(2) - (1)
"Urban" Eastern Borders	22,757	1080	1084	23,409	+ 656
"Rural" Eastern Borders	32,066	1088	1401	32,259	+ 506
Total	54,823	2168	2485	55,668	+ 1162

SOURCE : Registrar General's Mid-Year Estimates of Population.
Registrar General's Annual Reports.

TABLE 2.9 - Annual Average Rates of Natural Change 1971-74.

	"Urban"	"Rural"	Total	Urban/Rural
Annual Births per thousand 1971 population	15.8	11.3	13.2	1.4
Annual Deaths per thousand 1971 population	15.9	14.6	15.1	1.1

SOURCE : Table 2.8

Population projections have been prepared for parts of the Eastern Borders by Northumberland County Council (1976) and the Borders Regional Council. The Northumberland County Council projections have been based on three separate sets of assumptions as follows :

1) Population change will be determined by natural change only, with in- and out-migration offsetting each other.

2) Migration will proceed at rates experienced during 1966-71, in addition to natural change.

3) Migration will proceed at rates measured after 1971, in addition to natural change.

The projections for Berwickshire District and the Borders Region were prepared by the Registrar General and they would appear to be most consistent with assumption 3 above. The projections are reported in Table 2.10.

TABLE 2.10 - Population Projections.

		1971	1972	1981	1986	1991
Berwick	(1)	25,783		25,100	25,100	25,300
	(2)	25,800		23,000	21,400	19,700
	(3)	25,800		26,500	26,400	26,300
Berwickshire District			16,774	18,801	20,336	22,116
Borders Region			97,477	100,892	104,057	108,091

SOURCES : For Berwick, Northumberland C.C. Structure Plan (1976), Report of Survey for Consultation.

For Berwickshire District, Borders Regional Council, Action Plan for Development (1977), Review (Draft)

The projections for Berwick may be compared with the two decades preceding 1971 to gain an impression of the extent to which they imply a change in long run trend. From 1951-71 the net decline in population amounted to 15.2 per cent of the 1971 population. Projections (1), (2) and (3) indicate changes of -1.9 per cent, -23.6 per cent and + 1.9 per cent respectively. Essentially projection (1) is unrealistic in assuming no net migration. However in comparison with the early period

projection (2) seems pessimistic in projecting relatively high rates of migration. Projection (3) may be optimistic in extending the relatively favourable experience of the early 1970s forward two decades.

The Labour Market

The structure of employment

One of the major factors influencing people's decisions to migrate is the employment opportunities which are open to them. Employment in the Eastern Borders has been characterised over a long period by a steady decline of the agricultural labour force, combined with some increase in manufacturing.

The most regular source of information on the numbers employed is provided by the Department of Employment. As noted earlier, this information relates to Employment Exchange areas, and so does not exactly match the Eastern Borders. However, the more recent statistics since 1972 are only available as estimates, rounded to the nearest hundred. This means that they are not of sufficient accuracy for the examination of changes over short time periods or in small areas. Similarly, as they are collected on a different basis to those collected prior to 1972, there is an interruption of the time trend at this date. This lack of accurate, recent statistics means that the figures are too crude to show up any evidence of the Development Commission factories. They can, however, show general employment trend in the area and the relevant figures are shown in Table 2.11.

It can be seen that employment in the primary industries in the areas considered has fallen from 35 per cent of employment in 1961 to 19 per cent in 1975. The importance of agriculture in this trend is considered in more detail below. The loss of primary employment has partly been offset by gains in manufacturing employment. Between 1961 and 1971, 2585 jobs have been lost in the primary sector and 1266 have appeared in manufacturing. There was also a small gain in construction

employment. Other sectors have more or less maintained level employment throughout the period. The 1975 data suggest some sharp changes in employment but these may not be taken at face value because of changes in coverage of the statistics.

TABLE 2.11 - Employment in the Eastern Borders 1961-1975.

	1961		1966		1971		1975	
	Number	%	Number	%	Number	%	Number (thousands)	%
Primary	6527	34.6	5304	29.1	3942	22.3	3.0	19
Manufacturing	2760	14.6	3330	18.3	4026	22.7	3.8	24
Construction	1510	8.0	1572	8.6	1647	9.3	1.5	9
Distributive Trades	2121	11.3	2100	11.5	2213	12.5	1.8	11
Miscellaneous Services	5103	27.0	5134	28.2	5073	28.6	5.0	31
Administration	855	4.5	696	3.8	654	3.7	0.9	6
Grand Total (including unclassified)	18876	100.0	18220	100.0	17708	100.0	16.0	100.0

SOURCE : Department of Employment, Edinburgh and Newcastle.

NOTES : 1) Detail for individual Employment offices and the industrial groupings used are in Appendix 2.

2) Data after 1972 are not precisely comparable with those before. Unemployed workers were assigned to industries on the basis of their National Insurance Cards before that date. After 1972 the unemployed are not included in the totals.

3) The three employment offices included are Berwick, Eyemouth, and Kelso and Jedburgh, up to 1971. For 1975 the third office was the Kelso sub-office alone, which represents some 70 per cent of the combined total.

4) The grand totals include those not classified by industry and are thus greater than the sum of the industry totals.

Further information on manufacturing industry comes from a survey of employment in companies which was carried out in 1973 for the Development Committee. A total of 92 individual interviews were conducted with companies who then together employed 3679 people. This was thought to represent approximately 80 per cent of the total employment in manufacturing. The results indicated the existing manufacturing employment in the industries surveyed in the immediate catchment areas of Eyemouth, Duns, Coldstream, Earlston, Chirnside, Berwick and Kelso, together with the expected increases up to 1978. These figures include allowances for advance factory building by the Development Commission and Local Authorities and other projects which could be "forecast with a high degree of probability". Seventy per cent of the increase was expected to arise from the expansion of existing firms and by companies who were known to be operating in the area in 1973.

TABLE 2.12 -Existing and Expected Increases in Employment in the Eastern Borders, 1973-78.

	Existing Employment (end 1973)			Increase 1973-1975			Increase 1975-1978		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Eyemouth	178	138	316	288	208	496	330	187	517
Duns	63	105	168	111	97	208	66	40	106
Coldstream	148	51	199	101	23	124	53	16	69
Earlston	258	38	296	7	16	23	46	7	53
Chirnside	115	9	124	38	6	44	45	5	50
Berwick	1020	832	1852	490	172	662	960	228	1188
Kelso	520	204	724	146	205	351	83	21	104
Total	2302	1377	3679	1181	727	1908	1583	504	2087

SOURCE : Eastern Borders Development Association Development Committee Future Employment in Manufacturing Industry 1973/78, March, 1974.

In relation to this, we may note that manufacturing employment in Berwick and Eyemouth declined slightly (from 3.0 thousand to 2.9 thousand) between 1973 and 1975.

It has not been possible to obtain a full list of industries establishing in the area, although, due to changes in planning practice, local authorities now have details of current industrial establishment, so that such information should be available in the future.

The Development Committee gives a breakdown of the origin of the existing employment in 1973 :

Employment in :	Numbers
- Industries established before 1967	2744
- Industries introduced by Development Agencies 1967-1973	935
- Total existing industries	3679

Thus 25 per cent of manufacturing industry had been established in the area for 6 years or less. It is notable that, according to these data, there was no new industry established without being introduced by Development Agencies over the 6 year period.

One further source of information on the movement of manufacturing industry is the Northern Region Strategy Team (NRST), although their information only applies to the English part of the Eastern Borders. They have presented data relating to manufacturing plants in the Berwick Exchange area since 1961 as follows :

Industrial Group	Type of Move	Location	Date of Establishment
Food	New Enterprise	Wooler	1969
Vehicles	Inter Regional	Tweedmouth	1970
Light Mechanical Engineering	Inter Regional	Tweedmouth	1973
Agricultural Machinery	Intra Regional	Tweedmouth	1972

SOURCE : Northern Region Strategy Team (1976), Rural Development in the Northern Region.

NOTE : Only firms employing over 11 workers included. New enterprises refers to a firm occupying an advance or purpose built factory.

The three businesses at Tweedmouth are all in advance factories, as is the one listed at Wooler which suggests that there have been very few manufacturing companies establishing in the areas other than those occupying advance factories.

Primary Industries

Agriculture

Its share of employment indicates that agriculture is likely to be the most important industry in stimulating rural depopulation. While the extent to which labour is forced off the land by technological changes in agricultural production or to which it is "pulled" out of rural areas by urban influences and wage differentials may not be known precisely, the fact that numbers of employees have been declining over a long period is not in dispute. The annual census of agriculture collects information concerning the numbers of workers on farms, although the numbers of managers has only been collected more recently. The totals employed in each county are published annually. By aggregating from the individual parish returns it is possible to estimate the numbers employed, by various categories of workers, in the specific area of the Eastern Borders. Information was provided by the Department of Agriculture for Scotland for the 12 parishes in Roxburgh which fall into the Eastern Borders and the equivalent numbers were added to the parish totals for Northumberland and the county totals for Berwickshire. The totals are shown in Table 2.13.

TABLE 2.13 - Agricultural Employment in the Eastern Borders, 1964-74.

	Regular Workers				Seasonal & Casual		All Workers
	Full-time		Part-time				
	Male	Female	Male	Female	Male	Female	
1964	4102	186	188	284	145	206	5111
1966	3522	149	187	255	131	136	4380
1968	3113	117	136	210	94	138	3808
1970	2858	108	165	202	128	116	3577
1972	2732	115	162	186	98	77	3370
1974	2525	107	217	188	102	74	3213
Change 1964-74							
- numbers	-1577	-79	+29	-96	-43	-132	- 1898
- per cent	-38.4	-42.4	+15.4	-33.8	-29.7	-64.1	- 37.1

SOURCE : Agricultural Census, parish summaries.

It can be seen that by far the most significant net loss has been of regular full-time male workers. Over the period shown 600 regular full-time male workers have disappeared, which implies a much greater flow of workers out of agriculture. Of these, some would retire or give up work and others look for alternative employment. Previous studies suggest that the proportions could be as shown in Table 2.14.

TABLE 2.14 - Subsequent Occupations of Men Leaving Agriculture in South-East Scotland, 1967/68-1969/70.

Destination	Per cent of total
Other farm employment	31.7
Other rural employment	22.5
Urban employment	26.2
Emigration	0.4
Other	4.6
Not known	14.6
	100.0

SOURCE : McIntosh, F., (1972), A Survey of Workers Leaving Scottish Farms, Scottish Agricultural Economics, 22, 147-152.

If we ignore those moving to other farm employment and those whose destination was not known, virtually half of all others known to have left agriculture moved into urban employment. McIntosh also relates the rate of net loss of workers to total numbers leaving farms. For South East Scotland he found that for a net loss of 6.0 per cent of workers in 1972, 14.3 per cent actually left jobs on farms. If we apply this relationship to the net outflow of full-time workers in the Eastern Borders from 1964-74, of 1656, would indicate a gross outflow (including those moving to other farms) of 3947 over the same period. Of these, 1926 would have moved to urban employment if the survey findings could be simply applied to the Eastern Borders over that decade. Such estimates confirm the importance of rural to urban migration as a source of employment.

Fishing

The fishing industry is important in the area, not only as a source of employment itself, but as a source of raw material for food processing industries. The direct employment in fishing on the Scottish side of the Eastern Borders is tabulated in Table 2.15, together with information on the number of vessels operating and the value of fish landed.

TABLE 2.15 - Employment in Fishing and Fish Landed, Eyemouth District, 1967-75.

Year	Number of vessels	Fishermen	Value of fish landed by British vessels
			£'000
1969	70	200	444
1970	68	196	697
1971	66	190	706
1972	71	205	976
1973	55	212	1,294
1974	58	232	1,639
1975	55	220	1,412

SOURCE : Scottish Sea Fisheries, Statistical Tables.

The Demand for Labour

Important indicators of the strength of a labour market are activity rates and the level of unemployment. Activity rates, calculated as the percentage of the population aged over 15 which is economically active, that is in or seeking work, are tabulated in Table 2.16.

In Table 2.17 the "urban" and "rural" differences in activity rates may be seen by reference to unweighted means calculated from Table 2.16, compared with regional and national data. Perhaps the most striking

difference is between men and women in that male activity rates, "urban" and "rural" regional and national have declined whilst female rates have increased. Notable too is the fact that "rural" rates for men exceed the "urban" rates whereas for women they do not. This is consistent with men being more willing to travel to work than women, so that female activity rates are more likely to grow in an urban setting where there is more employment available. The change in activity rates for both men and women has been greater in the "urban" context than in the "rural" one. These changes in activity rate reflect a number of tendencies such as changing age structure of the population, changing number and type of jobs as well as changing aspirations of workers.

TABLE 2.16 - Activity Rates in the Eastern Borders, by Districts.

	Males			Females		
	1961	1966	1971	1961	1966	1971
Coldstream S.B.	94.9	85.1	66.7	41.5	40.0	38.6
Duns S.B.	85.3	88.9	83.8	28.0	41.4	46.7
Eyemouth S.B.	90.1	81.3	75.3	27.5	30.2	35.1
Lauder S.B.	77.3	60.0	73.9	29.2	42.3	45.8
East District	87.3	83.3	74.6	26.6	31.0	22.2
Middle District	90.4	85.0	79.3	28.0	35.6	38.4
West District	93.3	85.5	86.8	36.3	38.4	38.3
Kelso S.B.	88.8	85.1	78.6	31.7	41.8	45.0
Kelso District	88.4	90.8	84.9	27.0	31.9	33.6
Berwick M.B.	83.4	78.2	80.2	27.3	37.8	36.2
Belford R.D.	83.4	73.4	77.4	29.4	31.1	38.0
Glendale R.D.	83.9	80.7	83.1	27.2	33.3	34.9
Noram Islandshires R.D.	88.4	82.3	77.4	22.1	36.1	38.0

SOURCE : Population Census

TABLE 2.17 - Arithmetic Mean "Rural" and "Urban" Activity Rates in the Eastern Borders, 1961 and 1971.

	Males		Females	
	1961	1971	1961	1971
"Urban"	86.6	76.4	30.9	41.2
"Rural"	87.9	80.5	28.1	34.8
Northern Region	86.1	80.2	31.3	40.0
Great Britain	86.3	81.4	37.5	42.8

The level of male and female unemployment in the area has grown, over the period 1961-75, as shown in Table 2.18. Because of the small size of the labour market in the Eastern Borders (a total of only 15,000 men and women) the fluctuations from year to year would not be expected to follow a predictable trend. However, the rising trend of male unemployment does broadly follow the national trend.

TABLE 2.18 - Unemployment in Eastern Borders Employment and Exchange Areas, 1961-75.

	Males		Females	
	Number	Rate	Number	Rate
1961	265	2.04	51	0.86
1962	281	2.17	68	1.07
1963	324	2.51	59	0.90
1964	240	1.92	63	1.00
1965	292	2.43	76	1.21
1966	290	1.92	61	0.94
1967	282	2.44	123	1.94
1968	366	3.19	93	1.52
1969	425	3.94	61	0.96
1970	504	4.60	92	1.43
1971	548	4.85(5.3)*	107	1.67(1.88)*
1972	507	5.5*	108	1.80*
1973	279	2.54*	77	1.18*
1974	306	3.09**	86	1.51**
1975	424	4.24**	106	1.80**

SOURCE : D.E. Local Employment Offices.

* SYC changes

** Jedburgh excluded

Unfilled Vacancies

Information on vacancies deriving from the Department of Employment depends upon employers notifying local employment offices. As such they are not a measure of total vacancies, as not all vacancies are notified. They do nevertheless give some indication of the pattern of vacancies which has occurred.

TABLE 2.19 - Vacancies Notified During Period 1 January 1974 - 31 December 1976, Berwick upon Tweed E.E.

Agriculture, forestry and fishing	81
Mining and Quarrying	7
Food, Drink and Tobacco:	
Bakery	31
Fish and Poultry	130
Others	164
Coal and Petroleum Products	-
Chemicals and Allied Industries	1
Metal Manufacture	-
Mechanical Engineering	66
Instrument Engineering	-
Electrical Engineering	4
Shipbuilding and Marine Engineering	25
Vehicles	18
Metal Goods not elsewhere specified	-
Textiles	56
Leather, leather goods and fur	-
Clothing and footwear	-
Bricks, Potter, Glass, Cement etc.	-
Timber, Furniture etc.	40
Paper, Printing and Publishing	11
Other Manufacturing Industries	3
Construction	259
Gas, Electricity and Water	12
Transport and Communication	65
Distributive Trades	157
Insurance, Banking, Finance Services	14
Professional Services	36
Health Services	14
Miscellaneous Services	136
Hotel and Catering	235
Public Administration	115
Total	1680

(In addition to these there were 343 casual vacancies for dock workers (required for only 1-3 days)).

SOURCE : Employment Office, Berwick upon Tweed.

A similar, detailed breakdown, was not available for the employment exchanges in Scotland. The total numbers of vacancies notified have been supplied.

TABLE 2.20 - Total Vacancies Notified in Eastern Borders Employment Offices, 1974-76.

	1974	1975	1976	Total 1974-76
Eyemouth	1109	492	854	2455
Kelso	1413	549	270	2232
Berwick	-	-	-	1680

SOURCE : Department of Employment, Edinburgh

Clearly the numbers of vacancies created will depend partly upon the number of new jobs in the area and partly upon the rate of turnover of employment. Thus it is to be expected that distribution, construction and hotels and catering, in which there is a high turnover of workers, would be important in the above list. Because of this high turnover and the comparatively simple skills which are required for such work it is also to be expected that such workers could be recruited through the services of local Employment Offices.

Employment Transfer Scheme

The Employment Transfer Scheme provides assistance to workers who are unemployed or about to be made redundant and who move in order to take up employment in some other part of the country. The extent to which this scheme is used provides an indication of the movement taking place in the labour market. Clearly it is not known how many workers move without taking advantage of this scheme, so that these numbers provide a minimum estimate.

Information was supplied on the numbers of workers making use of the scheme, the employment which they entered and the part of the country from which they moved. It is not known how many moved out of the area.

Table 2.21 refers to the numbers of moves during the period 1 January 1974 to 31 December 1976.

TABLE 2.21 - Use of Employment Transfer Scheme in the Eastern Borders 1974-76.

	Berwick	Eyemouth	Kelso
Agriculture	15	8	10
Bakery	9		
Fish and Poultry Processing	1		
Other Food and Drink Industry	7		
General Engineering	12	3	3
Knitwear	2	-	1
Timber manufacturing	3		
Paper and Printing	1	9	
Other Manufacturing Industries	1		
Construction	2	8	3
Professional Services	8		
Miscellaneous Services	3		
Hotel and Catering	12	1	2
Retail Distribution	1	2	
Health Service	4	1	
Marine Engineering	-	5	
Councils	-	6	4
Coal Merchants	-	1	
Fish and Food Processing	-	7	
Grain Miller	-	1	
Transport	-	2	
Plastics	-	-	1
Soft Toy Manufacture	-	-	2
Tyre Fitting	-	-	1
Concrete Refractory Products	-	-	4
Forestry	-	-	4
Private Residences	-	-	3
Electronics	-	-	15
Total	81	54	53

SOURCES : Employment Office, Berwick upon Tweed.
Employment Service Agency, Area Office. Edinburgh.

TABLE 2.22 – Area of Origin of Those Using the Employment Transfer Scheme.

	Berwick	Eyemouth	Kelso
South Scotland	12		
Scotland East and North	2	30	23
Scotland West	1	6	8
Borough of Berwick upon Tweed	28		
North East	25	11	12
Yorkshire and Humberside	5		
North West		1	1
East Midlands	5	2	1
West Midlands			2
East Pennine		2	2
Central Southern England	1		
South East	1		1
South West			1
Merseyside			1
South		1	1
Wales		1	
Greater London	1		
Total	81	54	53

SOURCE : Employment Office, Berwick upon Tweed
Employment Service Agency, Area Office, Edinburgh

It can be seen that workers have entered a range of industries in the area. It appears, especially those moving into the Berwick E.E. Area have only moved short distances.

Journey to Work

Information concerning the nature of peoples' travel to work is available from the 1971 census (10 per cent sample). A high proportion of those in employment in the area both live and work within the same local Authority (85 per cent of male employees and 84 per cent of females). The numbers are distributed as shown in Table 2.23.

TABLE 2.23 - Journeys to Work in the Eastern Borders, 1971.

		All
Those in employment living within the Eastern Borders :		
(a)	Total	2256
(b)	Working in same Local Authority	1910
(c)	Working in different Local Authority in E.B.	182
(d)	Working outside Eastern Borders and unclassified Local Authority*	164
Those in employment living outside the Eastern Borders :		
(a)	Working within Eastern Borders	26

SOURCE : Population Census

* Where less than 5 workers commute to an area of work-place, this is not indicated in the Census, instead this number is included in the total for the county. This total will therefore include workers working in Local Authorities inside the Eastern Borders, in Roxburgh and Northumberland where part of the county is outside the area as well as those travelling across the border to work as individual Local Authority destinations across the border are not indicated.

Berwick upon Tweed M.B. appears to be the only Local Authority area with any significant numbers travelling in to work. The ten per cent sample census shows 11 people living in Glendale R.D. and 36 in Noram and Islandshires commuting into Berwick. The only other areas

with more employees working in it than living there are Lauder S.B. and Kelso District (and East D.C. with one more). However, for the reasons mentioned in the footnote to the table above, it is not possible to know the exact numbers of commuters into areas.

The highest numbers of commuters moving out of areas of residence came from Noram and Islandshires R.D., and these largely worked in Berwick. On the whole, however, the amount of commuting is quite small in relation to the working population.

The mode of travel used is also recorded, in Table 2.24. Inevitably only a small number of people use buses for transport to work in the "rural" areas. A substantial proportion of the population are able to travel to work on foot. The pattern of travel to work of employees working in the Development Commission factories is considered later.

TABLE 2.24 - Mode of Travel to Work in the Eastern Borders, 1971.

	'Urban' Areas		'Rural' Areas	
	No.	%	No.	%
Car	352	33.7	291	24.5
On foot or none	464	44.4	562	47.2
Bus	147	14.1	33	2.8
Motorcycle	18	1.7	10	0.8
Pedal Cycle	22	2.1	28	2.4
Other	43	4.1	266	22.4
Not stated	12	-	29	-

SOURCE : Population Census, 1971

Housing

The availability of housing is important in influencing rates of migration and the length of journeys to work. Data are available on house completion and demolition, from which the changing stock of housing may be inferred. These data are reported in Table 2.25. Over

the eight years reported the net increase in housing stock was nearly 2,000 houses, of which nearly three quarters were provided by local authorities.

Limited data on the use of houses is available from the Registrar General for Scotland, Table 2.26. The number of houses uninhabited should be interpreted with caution as there are many possible reasons why houses should be empty. They may be awaiting demolition, for sale, awaiting a new tenant or in the process of changing use. At any point in time a proportion of any housing stock will be empty reflecting a combination of such reasons. Thus in the Scottish Eastern Borders it is notable that increase in the number of empty houses apparently preceded the increase in housing stock in 1974 and 1975 by several years; no explanation for this difference in timing is available.

TABLE 2.25 - Annual Change in Housing Stock, Eastern Borders 1969-71.

	House construction by: Local authorities	Other public sector	Private sector	Total	Houses demolished	Change in housing stock
1969	6	0	67	73	29	+ 44
1970	190	1	122	313	22	+ 291
1971	138	0	70	208	41	+ 167
1972	51	1	55	107	12	+ 95
1973	113	0	51	164	13	+ 151
1974*	297	0	140	437	7	+ 430
1975**	362	38	77	477	11	+ 466
1976***	287	0	34	321	3	+ 318

* In 1974 the only English Authority included was Berwick upon Tweed District.

** In 1975 the data relate to Berwick upon Tweed and Berwickshire District, south and north of the Border respectively.

*** The 1976 data relate to Berwickshire District only.

SOURCE : Department of Environment, Local Housing Statistics. England and Wales.
Scottish Development Department, Housing Returns for Scotland.

TABLE 26 - Occupation of Houses, Scottish Eastern Borders, Selected Years.

	Total	Inhabited	Uninhabited
1963	19593	19955	438
1970	20532	19624	908
1971	20504	19698	806
1972	20614	19809	805
1973	22243	21293	950
1974	22736	21757	979

SOURCE : Registrar General for Scotland, Annual Report.

CHAPTER 3

THE DEVELOPMENT COMMISSION FACTORY PROGRAMME

The information presented in this chapter has been drawn from a number of sources. These have mainly been the English Industrial Estates Corporation, the Scottish Development Agency and the factory managers themselves.

Following the establishment of the Eastern Borders Development Association Development Committee in 1966, authorisation to build the first advance factory in Berwick was given later in the same year. Land was acquired for this factory in 1967 and its construction was completed in March 1968. Following this, further factories have been constructed in Kelso, Eyemouth, Duns and Coldstream, as well as in Berwick.

Table 3.1 provides a list of the factories constructed up to mid-1977.

TABLE 3.1 - Development Commission Factory Construction

		Initial Size (sq.ft.)	Construction completed
Berwick	AF1	14782	1968
	AF1(a)	14782	1971
	AF2	13909	1971
	AF3	9800	1974
	*AF4	16124	1974
	*AF5	2 x 3000	1976
		2 x 4500	1976
	*AF6	9817	U/C
Duns	AF1	4132	1971
	AF2	3940	1973
	AF3	4338	1976
Eyemouth	AF1	9341	1971
	AF2	10345	1975
	*AF3	10000	1977(estimated)
Coldstream	AF1	5356	1974
Kelso	AF1	10136	1968
	AF2	10344	1972
	*AF3	3000	1977(estimated)

* Not occupied at time of survey.

A wide range of activities are carried out in these factories.

TABLE 3.2 – Activities in Development Commission Factories.

Activity	Number of factories
Food Processing	4
Motor Vehicle Components	1
Light Engineering	1
Agricultural Engineering	1
Prefabricated Housing	1
Printing and Box Making	1
Paper Converting	1
Electronics	1
Plastics	1

The companies occupying these factories have originated from a variety of sources, including a number which were generated locally. It appears that four companies were operating in the Eastern Borders prior to being allocated an advance factory, although two of these had only been in operation for a short time. Four were either completely new companies or were established in association with other local companies and four moved into the area from outside the Eastern Borders.

In considering the impact which these companies have, it is relevant to relate this to the situation which would have existed in the absence of Development Commission factories. It may be assumed that those companies which have moved into the area would not have done so had the factories not been available. However, of the new companies, some might have been established in the area anyway. At least one of these considered that the company would definitely have been established in the Eastern Borders. Similarly for the companies which were previously operating in the area, some would have remained in their old premises and others believed that they would have found new premises.

One of the companies interviewed in this group considered that they would have gone out of production if a factory had not been available. The chief advantages gained by providing factories for such companies lies in the increased scale of operation which is allowed. Two companies considered that they would be operating at a smaller scale than at present, and one would have been operating at the same scale, although production would have been lost over the period. It is possible that in the event of a factory not being provided, these companies might have been forced out of production or to leave the area.

A breakdown of present employment by origin of company and of possible employment by these companies in the Eastern Borders in the absence of Development Commission factories is shown in Table 3.3. It is interesting to note that under a third of the jobs have resulted from companies moving into the area.

TABLE 3.3 – Local Employment in Absence of Development Commission Factories.

Employment:	Present employment	Possible employment in absence of factories
in companies moving into the area	232	-
new companies	248	145
companies already in area	179	50
companies not interviewed*	129	n.a.
Estimated Total	788	195

* Estimated

While the estimate of employment in the absence of the provision of factories must at best represent a guess, it does give some indication of the order of extra employment resulting from their construction.

The numbers employed in the factories have gradually built up to this current total over the period. Table 3.4 shows how they have increased since 1972. Before this date there were only two companies in

operation, and reliable details of employment levels are not available. Where it was not possible to obtain accurate details of employment, estimates have been made on the basis of available information.

TABLE 3.4 - Estimated Total Employment in Development Commission Factories

	Males	Females	Total
1972	166	123	289
1973	184	183	367
1974	230	244	474
1975	285	284	569
1976	323	309	632
1977	375	413	788
Predicted*:			
1978	478	518	996
1982	613	625	1238

* Excluding new companies establishing in factories currently available or under construction or expansion in the two companies not interviewed.

There has been a steady increase in the numbers of employees since the scheme in the Eastern Borders was started. It is also expected that the numbers employed in the existing factories will continue to grow over the next five years, although the actual numbers indicated should be treated with caution. The numbers of jobs have been quite evenly distributed between male and female employment, although during the past year the numbers of women employed has increased faster than the numbers of men.

Nature of Employment Provided

A breakdown was made of the type of employment which is provided in the Development Commission factories which were surveyed and this is shown in Table 3.5.

TABLE 3.5 - Type of Employment (1977)

Full Time		
Managerial and Clerical	Male	54
	Female	34
Skilled Workers*	Male	141
	Female	31
Apprentices and Trainees	Male	34
All Others	Male	109
	Female	185
Part Time**	Male	11
	Female	60
Outworkers and Casual		9
TOTAL		668

* This was defined as somebody who is able to work without supervision and who has probably had a training period of at least six months. Final decisions about this were left to the factory manager.

** Less than 20 hours per week.

Just under 20 per cent of the females are only employed part time, while the proportion of male workers who are part time is only about 3 per cent.

In establishing in the area, the companies have brought a number of key workers into the area. The total number of these is 64, of which 63 are males.

Expected Employment in Factories

In applying for a factory, companies have to make some estimate of the number of people which they expect to employ. This number is compared with numbers achieved and expected at the present time.

Total Expected Employment	1153
Estimated Current Level of Employment	788
Estimated Employment in 3rd Year of Operation* of each Company	791
Estimated Employment in 1 years time**	996
Estimated Employment in 5 years time**	1238

* Where companies have not yet been in operation for a full three years, the expected levels of employment, as indicated by managers, has been used.

** Includes estimated current employment levels for companies not interviewed.

On the whole companies have not reached their expected levels of employment within the first three years of operation, although expectations for the numbers likely to be employed in five years time exceed the number originally expected. (Of course any predictions for five years in the future are likely to be extremely tentative.) It seems likely that the current low state of the economy could have resulted in lower growth rates than had been anticipated.

Destination of Company Sales

The bulk of the output of these companies is marketed outside the Eastern Borders. Eight of the ten companies which were interviewed sold 5 per cent or less of their output within the Eastern Borders, while 6 of them sold over half their output to the United Kingdom excluding the Eastern Borders. Two companies sold over half of their output outside the United Kingdom.

TABLE 3.6 - Sales Areas for Companies' Outputs (Numbers of companies in each category)

%	Within Eastern Borders	In rest of U.K.	Exported
0 - 5	8	0	5
6 - 25	0	0	3
26 - 50	0	4	0
51 - 75	2	2	2
76 - 100	0	4	0

Progress in Factory Construction

In considering the rate of progress of development in the Eastern Borders, it is useful to examine the period between a factory being authorised and its eventual occupation. Considerable delays have occurred in this process, and it may be of value to know where these delays have occurred, although a more detailed knowledge of the events at the time would be needed to explain the cause of these delays.

Details of the dates on which the various events took place are shown in Appendix 3. The length of time elapsing between authorisation and occupation varied between 51 months (Berwick AF2) and 11 months (Duns AF2). The longest delays in acquiring suitable land for development have occurred in Berwick, especially for AF2 and AF3. In other towns, especially latterly, delays have been much shorter. The lengths of time taken for construction have tended to be fairly constant, varying between 5 and 10 months.

The periods between the completion of construction and first occupation represent an indication firstly of the difficulty of finding suitable tenants and secondly of the cost of building advance as opposed to bespoke factories. The length of these time periods has varied between 30 months (Kelso AF2) and 0 months (Eyemouth AF2). The total rental not collected on each of the factories, over the period during which they remained unoccupied is £34,750 in current values or £59,724 in 1976 prices if they are brought to a common base using the G.D.P. Deflator (the index of home costs). In that occupants of advance factories in the Development Areas are eligible for a 2 year rent free period, this rent would not have been collected for 2 years anyway. Thus the costs of having factories standing empty could be discounted over the two year period. This reduces the cost (at 10 per cent discount rate) to £28,720 in current prices or £49,359 in 1976 prices.

Changes of Ownership

Three of the factories have changed tenants up to the present time, one of these being an extension for a company which remained in

its original factory after moving out of the extension. The other two factories were occupied for relatively short periods (17 and 10 months) by their original tenants. These have all been re-occupied by new tenants.

Extensions

Extensions, constructed by the Department of Industry, have been built for four of the companies in occupation and for another company which is about to occupy a factory in Berwick. In the following analysis, the costs and effects of these extensions have been included with the rest of the factory programme.

Experiences of Companies in the Factories

Five out of the ten managers interviewed considered that the availability of a factory was the single most outstanding reason for establishing in the Eastern Borders. Of the others, two considered that it was an important factor, and the other three had premises in the area prior to moving into their Development Commission factory. This was by far the most important factor which was mentioned. The next two most important reasons were the Regional Incentives which were available in the Eastern Borders and the anticipated availability of a pool of local labour. Three managers considered that the availability of local housing (two with prompting) was an important factor influencing the decision and three (all after prompting) considered the fact that there was room for expansion to be important. Only one company (with prompting) considered the encouragement of a local organisation to have been important.

A range of problems had been experienced in establishing the factories. The most important of these was in the recruitment of skilled labour, in an area where there is no tradition of factory employment. Three firms considered this to have been the single most important problem. Three other firms mentioned general shortages of labour as having been a problem to some extent. Three managers also mentioned shortage of capital and two managers considered that the lack of training facilities had led

to difficulty, although it was recognised that there was not enough demand to justify the establishment of training facilities locally. Another difficulty mentioned by two firms was the increased transport costs in a remote area, although this did not appear to have been too serious. Some managers also mentioned delays which they had experienced in dealing with large Government organisations.

Assistance had been provided by a number of organisations to the companies moving into the factories. The organisations most often mentioned as being helpful were the English or Scottish Industrial Estates Corporations (latterly the Scottish Development Agency). These were mentioned by eight of the managers, three of whom considered them to be the single most helpful organisation. This is to be expected in relation to the importance given to the availability of the factories. Three others considered that EBDA had been the single most helpful organisation although this was only mentioned as being helpful by two others. Other organisations considered helpful were the small industries councils, the Department of Industry and the local councils.

Managers were asked to indicate what they saw as being the major constraints to further development. This question received a wide range of responses, with no one particular constraint being dominant. The possible limitations to further development which were mentioned were possible shortages of labour generally, especially should housing also be restricted, and the difficulties of attracting skilled workers to move to the Eastern Borders, possible problems in acquiring suitable land for further development, the restrictions imposed by the general economic climate and limitations of market and the poor access and communications which the Eastern Borders has with the rest of the country.

Shortages of labour, either skilled or unskilled was a problem mentioned a number of times. This appears to have conflicted with managers' expectations prior to moving in, which tended to be that there would be an adequate supply of at least unskilled workers. It is not known whether this has in any way limited the actual performance of the companies, but does illustrate the importance of detailed studies of local labour availability prior to factory construction.

CHAPTER 4

EMPLOYMENT IN THE DEVELOPMENT COMMISSION FACTORIES

The total number of people employed in the factories has been considered above. In order to discover details about these employees, a survey was carried out in April and May, 1977. Questionnaires were distributed amongst employees and 260 replies were received. This represents a sample of 33 per cent of the estimated total employment in the factories, and nearly 40 per cent of the employees in the factories which were visited. The questionnaire asked for information about the current and previous occupation of the respondent, his travel to work, his alternative occupation in the absence of his current job, his financial position and his age and family. It was kept as brief and simple as possible, so as to encourage a high response rate, and this seems to have been justified by the numbers returned. Questionnaires were handed out with reply-paid envelopes, so that they could be completed in the respondent's own time. In this chapter the main results of the survey are presented as well as any analysis which has been required to provide data for other sections. The main points of the survey are considered in the text and some further details are given in Appendix 4. The results of a further survey of new factory tenants, carried out in 1979, are included in Chapter 11.

In some cases, the totals indicated in the tables do not add up to the total number of respondents. This has occurred where individual questions in the questionnaires were answered by different numbers of people. Fewer replies were received to questions about income and age compared with other questions.

The Sample

Completed questionnaires were received from an estimated 33 per cent of all employees in Development Commission factories. The origin of these is shown in Table 4.1.

TABLE 4.1 - Location of Respondent by Town of Factory

	Total employment*	Response	%
Berwick upon Tweed	286	111	38.8
Eyemouth	155	72	46.5
Duns & Coldstream	139	3	2.2
Kelso	208	74	35.6
Total	788	260	33.0

* Including estimates of factories not interviewed

The sample was not randomly selected as questionnaires were completed by as many people as were willing to do so. This could have led to some bias in the responses, although it is hoped that the good response, nearly 40 per cent of those employed in the factories to which questionnaires were taken, means that the survey is representative of the employees generally. The majority of the questionnaires were returned by post, although 32 (12 per cent) were completed and returned by hand during the factory visit.

Employment in the Factories

Respondents were asked to indicate the general nature of the work with which they were involved in the factories.

TABLE 4.2 - Occupations of Respondents

	Males	Females
Management	25	1
Directly Involved in Production	92	99
Providing Supporting Services	9	1
Secretarial or Clerical	5	17
Collection or Delivery of Goods	2	1
Total Replies	133	119

As would be expected, there is a much higher involvement of males with managerial work and of females with secretarial or clerical work. Sixty nine per cent of the males and 83 per cent of the females were directly involved with some aspect of production. All but one of the males who replied were employed full-time, while 23 per cent of the females were employed part-time.

TABLE 4.3 - Weekly Take-home Pay of Respondents

	Males	Females
£ 0 - 30	35	88
£ 31 - 50	61	22
£ 51 - 70	22	0
£ 71 - 90	8	0
£ 91 - 110	2	0
£111 +	3	0
Total Replies	131	110

The take-home pay (Table 4.3) which was received illustrated the longer hours and greater responsibility of the male employees compared with the females.

A substantial number of employees considered that they did not become financially better off as a result of taking up this employment.

TABLE 4.4 - Changes in Take-home Pay on Taking up Factory Employment

	Males		Females	
- £4-5 or more	26		13	
- £2-3	10	30%	7	22%
- £1	2		1	
No Change	17		7	
+ £1	4		2	
+ £2-3	15		18	
+ £4-5	15	56%	9	70%
+ £6-10	15		17	
+ £11 or more	22		20	
Total Replies	126		94	

This large number experiencing a fall in take-home pay is perhaps somewhat surprising, although Mackel (1975) in a survey of farm workers leaving agriculture in Eastern Scotland found that 33 per cent of these suffered a reduction in their money wage.

As must be the case where factories have been operating for only a short time, the employees tended to have not been employed in their present jobs for very long. Forty one per cent of respondents had been employed for less than one year and 66 per cent for less than 3 years. There were more males who had been employed for longer periods than females. Twenty eight per cent of males as opposed to 7 per cent of female respondents had been employed in their current job for more than four years. This probably results from two causes, firstly that more females have been recruited in the factories recently and secondly that those involved with management i.e. mostly males, would be the first to be employed in the establishment of a new company. In fact, seven out of the 27 respondents who had been employed for over five years were engaged in management, while none of the 37 respondents who had been employed for less than three months were.

TABLE 4.5 – Employees' Situations Prior to Factory Employment

Previous Situation	Males		Females	
	No.	%	No.	%
School	22	16	16	13
Registered Unemployment	20	15	10	8
Unregistered Unemployment	2	2	22	18
Employed in same Company Elsewhere	7	5	4	3
Agriculture and Fishing	8	6	5	4
Other Factory Employment	44	33	28	23
Construction	6	4	2	2
Services	23	17	33	28
Armed Forces	2	2	–	–
Total Replies	134		120	

Employees indicated a variety of situations from which they had moved to their present positions. The most important source of labour is from other factory employment for males and from the services sector for females, although other factory employment is also an important source. These two sources together have contributed 50 per cent of all the employees. Eighteen per cent of the females were previously not working and have been drawn into the labour force as a result of the availability of suitable employment. Only a small proportion of employees have moved directly from agriculture or fishing (6 per cent of males and 4 per cent of females).

At least 80 per cent of the employees did not need to move house in order to be able to take up their job. Of those who did, the highest number moved into the area from outside the Eastern Borders area. Of the 51 respondents who indicated the nature of their move, 42 had moved from outside the Eastern Borders, three from another local town within the Eastern Borders and six from a village or rural area within 25 miles of Berwick upon Tweed. This result is surprising in view of the apparent movement from the rural areas into the larger settlements which was noted in Chapter 2.

Respondents were asked to indicate what they thought that they would have been doing if a job in that factory had not been available. The answers to this question must obviously be treated with caution as the local employment situation would clearly be very different in the absence of all the Development Commission factories. However they do provide some indication of likely actions.

TABLE 4.6 - Alternative Situations in Absence of Present Job

Alternative situation if job not available	Males		Females	
	No.	%	No.	%
Remained in old job	37	29	35	30
Unemployed	9	7	17	15
Left the Eastern Borders	21	16	8	7
Found another job within the E.B.	60	47	53	47
Retired or given up work	2	2	3	3
Total replies	129		116	

Easily the highest number of people believed that they would have found other jobs locally. The increased number of people looking for work would have meant that some of these would have been unsuccessful as well as the fact that employment which was found would have had effects on the chances of others, not employed in these factories, finding employment locally. Thus it is likely that, in fact, the numbers leaving the area and the numbers unemployed would be higher than indicated. These numbers are estimated below.

Travel to Work

Respondents were asked to indicate the distance and the method by which they travel to work. The most common modes were either walking or travelling by car.

TABLE 4.7 - Mode of Travel to Work in Eastern Borders

	Number	%	'Urban' Areas* within Eastern Borders
Car	108	42	34
Walk	89	34	44
Bus	26	10	14
Company Transport	26	10	not given
Motor bike	6	2	2
Other	4	2	6
Total Replies	259		

* 1971 Census.

The types of transport used can be compared with those used generally in the 'urban' areas of the Eastern Borders. The proportion travelling by car is slightly higher and that walking is slightly lower, although this could result from general changes taking place since 1971 rather than from any difference between the factory employees and other local workers.

The location of the factories on industrial sites relatively close to residential areas means that quite a large number of employees have only a short distance to travel. Thus, 39 per cent of the employees lived within one mile of their work, and 67 per cent within two miles. About 10 per cent lived over ten miles from their factory. It is possible to relate distance travelled and method of transport. As would be expected a high proportion (80 per cent) of those walking lived within one mile of their employment.

TABLE 4.8 - Numbers of Employees Travelling Various Distances to Work

	0-1 mile	1-2 miles	2-5 miles	5-10 miles	10-20 miles	20 + miles
Car	21	43	17	14	13	-
Walk	70	15	2	1	-	-
Bus	3	10	7	2	3	-
Company Transport	3	2	3	10	2	6
Motor bike	1	3	-	1	1	-
Other	1	1	2	-	-	-
Total Replies	99	74	31	28	19	6

It could be significant that company transport has had to be provided for 18 employees in the survey who lived over five miles from their work, six of whom lived over twenty miles away. These numbers, however, are likely to be small in relation to those required to justify public transport provision, although improved services might increase the numbers of people living greater distances from the factories who would be willing or able to take up employment.

It seems unlikely that the increase in fuel prices experienced in 1973 would have had any significant long term impact on this pattern, although it has not been possible to examine the changes in commuting patterns over the period. However, in real terms consumers expenditure

on travel in 1975 was only slightly higher than that in 1972. This is no doubt partly a result of price changes and partly of adjustments made by consumers. The petrol prices over the period are also shown in Table 4.9, and it can be seen that in real terms the price of petrol rose by just under 30 per cent between 1973 and 1975. There is no evidence of any significant change of mode of transport between the 1971 census and the present survey.

TABLE 4.9 - Consumers' Expenditure and Petrol Costs in 1970 Prices

	Total Running Costs of Motor Vehicles* £ million	Total* Travel £ million	Petrol** Price (4 star) p/gall
1970	1692	1010	33.1
1971	1753	1015	32.3
1972	1920	1080	31.0
1973	2025	1152	30.5
1974	2027	1108	35.9
1975	2002	1088	39.2
1976	n.a.	n.a.	39.1

* Central Statistical Office, Annual Abstract of Statistics, HMSO, 1976.

** A.A. private communication. Prices averaged over years and deflated by retail price index.

The importance of the cost and availability of public transport for people travelling to work is likely to increase as the demand for labour in the towns increases with the expansion of the employment in Development Commission factories. It may prove necessary for more of these companies to provide their own transport facilities so as to increase the numbers of people who are able to work in their factories. In that there is not a large pool of labour with easy access to these factories it might be valuable to study the economics of provision of transport to the factories. Possible shortages of local labour was a problem mentioned by four of the factory managers interviewed and transport provision could help to ease this.

Generally, however, it seems unlikely that increasing the travel-to-work area will have any large effect on the size of the labour market due to the remote nature of the area, although, it might have the effect of bringing some previously inactive females into the labour force.

The survey provides little firm evidence that employers have been needing to seek workers from further afield. The length of time which the employees had been working in the factories was related to the distance which they travel to work.

TABLE 4.10 - Length of Employment in Relation to Average Distance Travelled to Work.

Length of employment	Number of replies	Average distance travelled (miles)	% employees travelling over 10 miles
0-3 months	38	5.5	21
3 months - 1 year	66	2.8	8
1 - 2 years	33	3.3	9
2 - 3 years	34	3.6	9
3 - 4 years	41	3.8	10
4 - 5 years	17	1.7	0
5 years +	29	3.6	7

The high figures for those having been employed for less than three months result from four people who travelled over 20 miles. It is not possible to say whether this is indicative of future trends of employees travelling further to work or whether this has happened by chance.

Personal Characteristics of Employees

Replies were received from 134 male employees (52 per cent) and 123 females (48 per cent). A high proportion of the employees fell into the younger age groups. Fifty nine per cent were under 35 and 36 per cent under 25, while only 10 per cent were over 55. This age distribution may be compared with that of the population of working age in the Eastern Borders as a whole (in 1971) who were of working age.

TABLE 4.11 - Age Structure of Factory Employees and Total Population

Age	Male employees	Male* population of working age	Female employees	Female* population of working age
	%	%	%	%
15 - 24	33	21.2	39	19.6
25 - 34	24	17.7	21	17.2
35 - 44	17	18.9	23	18.3
45 - 54	12	20.7	12	20.8
55 - 64	13	21.6	5	24.1
65 +	1	-	-	-

* 1971 Census

Thus the employees tend to be much younger than the population as a whole, and presumably therefore other workers in the area. This could result from the general nature of the work, or of the people seeking work in the area. Sixty three per cent of the respondents were married (62 per cent of males and 65 per cent of females) and 54 per cent had no children. The age/sex structure of the employee population is nevertheless likely to lead to a much higher rate of natural increase than that of the population as a whole.

TABLE 4.12 - Numbers of Children

Number of Children	Number of respondents: Male	Female
0	74	61
1	13	9
2	28	22
3	15	15
4 or more	4	11
Total Replies	134	118

Assuming that those with more than three children all had four, it is possible to estimate the total population which is in some way directly dependent on the Development Commission factories. In order to check for potential double counting, respondents were asked to indicate whether their spouse was employed in the same factory and 14 (five per cent) indicated that he or she was. It is not known how many had spouses employed in other Development Commission factories.

In order to roughly adjust for this double counting, it is necessary to reduce the number of spouses by eight and the number of children by ten.

	Total number of employees	Spouses	Children	Total Population
In replies	260	164	274	698
Adjusted	260	156	264	680

Thus assuming that the sample represents 33 per cent of the total number of employees, the estimated total population which is in some way dependent upon this employment is :

	Total number of employees	Spouses	Children	Total Population
All factory employees	788	473	800	2061

However, a number of these, especially women with husbands working elsewhere will not be primarily dependent upon this employment. The numbers of people who are indirectly dependent upon these factories is considered later.

Alternative Situations of Development Commission Factory Employees

In order to assess the effect of Development Commission factories on the local labour market it is necessary to estimate the employment status of the workers employed if the factories had not been established. Without such an estimate, the simplest possible assumption would be that all the workers employed in the factories would have been unemployed. This is obviously an extreme assumption and a more complex set of assumptions has been derived as follows.

(i) It is assumed that those who were unemployed prior to taking up employment would have remained so. This is not to say that these would be the same individuals, but that the proportion of unemployed among this group would not have fallen in the absence of the factories.

(ii) It is assumed that those who indicated that they would have left the Eastern Borders if their present job had not been available would have done so.

(iii) It is assumed that those who have moved into the area and taken up employment would not have done so. It is possible that in fact some of these people would have moved into the area for reasons other than factory employment, although a high proportion of the 'key workers' moving into the area took up employment with companies which would be unlikely to have established in the area in the absence of the advance factories.

(iv) It is assumed that 25 per cent of the jobs in the factories would have been created anyway. This is a low estimate based on managers' opinions. (see Chapter 3).

(v) The remainder of the employees are then assumed to be unable to find employment locally and so are redistributed between unemployment, emigration and retirement on the basis of the employees' opinions expressed about what they would have done if their job had not been available.

This approach ignores those who considered that they would have remained in their old job if one had not been available in the factories. This is because they would be likely to have been replaced in that job and so by not leaving it, they would simply oblige a different person to look for employment. However, a proportion of the vacancies created by people moving to the factories would not have been filled, i.e. these people would have represented 'concealed' unemployment. Thus by leaving their job they have reduced the size of the local labour market. It is difficult to estimate the extent to which this might have happened. H.M. Treasury (1976) have made estimates of the sources of labour for incoming industries and suggest that the reduction of concealed unemployment in Rural Northumberland would be six per cent of jobs created for males and 15 per cent of jobs created for females. Similarly, in Roxburgh they estimate that there would be no reduction in concealed unemployment for males or females. Thus it may be assumed that three per cent of male employment and seven per cent of female employment in the factories would have been supplied by a reduction in concealed unemployment in the Eastern Borders. These assumptions lead to the following estimates:

TABLE 4.13 - Sources of Employees for Development Commission Factories

		Males		Females	
		No.	%	No.	%
(i)	from employee survey:				
	Previously Registered Unemployed	20	15	10	8
	Previously Unregistered Unemployed	2	2	22	18
	Those moved into Eastern Borders	28	21	14	11
	Those who say would have moved out	21	16	8	7
(ii)	from H.M. Treasury (1976):				
	Reduction in concealed unemployment		3		7
(iii)	Estimated:				
	25 per cent of jobs created anyway		25		25
(iv)	residual:				
	Remainder seeking alternative occupations		18		24
TOTAL			100		100

The remainder, who had expected to be able to find work locally, is assumed to be unable to do so. They are allocated to other occupations in the following proportions:

	Male	Female
Unemployment	28%	61%
(registered	25%	19%)
(unregistered	3%	42%)
Emigration	66%	28%
Retirement	6%	11%

Thus these people are assumed to

	Male	Female
be unemployed (registered)	5	10
(unregistered)	-	4
emigrate	12	7
retire	1	3
TOTAL	18	24

This gives the overall percentages of alternative occupations to which can be applied the estimated numbers currently employed in the factories. These are 375 males and 413 females and are distributed as shown in Table 4.14.

TABLE 4.14 - Alternative Situations of Factory Employees

	Male		Female	
	No.	%	No.	%
Registered Unemployed	75	20	50	12
Unregistered Unemployed	7	2	116	28
'Concealed' Unemployed	11	3	29	7
People not immigrated	79	21	45	11
People emigrated	105	28	58	14
Retired	4	1	12	3
Employment available anyway	94	25	103	25
TOTAL	375	100	413	100

CHAPTER 5

THE FINANCIAL IMPACT OF THE FACTORIES IN THE EASTERN BORDERS

The number of people directly employed in the Development Commission factories has been considered above. However, these factories will cause a further impact on the local economy through three main effects:

a) The impact of the expenditure of employees
b) The impact of the purchases made by the companies
c) The impact of the construction of the factories.

Each of these three impacts represent injections into the local economy and their significance for local incomes will depend upon the extent to which they stimulate further local economic activity. The size of the injection to the local economy will depend upon the amount which leaks directly out of the region, such as expenditure on goods which are purchased outside the Eastern Borders. However, much expenditure, even if it is on imported goods, will have some component of 'local value-added', as they are likely to at least be re-sold by residents in the Eastern Borders.

The impact of the factories will be evaluated in two stages: firstly the total expenditure involved in the Development Commission factory programme and of the expenditure by the companies in these factories will be assessed and the amount which represents an injection to the local economy estimated; secondly, this amount will be raised by a local multiplier, which is estimated below, in order to provide a measure of the total extent to which local incomes have been raised.

The secondary income which is created as a result of the factories will largely accrue to employees in the service sector and the extent of this can provide an estimate of how many jobs the factories will support

in this sector. From this, it is possible to gain some insight into the total number of people whose employment is dependent upon these factories.

This information can then, on the basis of knowledge of the labour force gained from the employee survey, be used to estimate the total population which has been retained in and introduced to the Eastern Borders as a result of the Development Commission factory programme.

A Local Multiplier for the Eastern Borders

The extent to which one pound of extra income injected into a region raises total regional income is measured by the regional income multiplier. Details of the calculation of a multiplier for the Eastern Borders are given in Appendix 5. It is estimated that the value of the regional multiplier for the Eastern Borders is 1.21.

Local Impact of Company Purchases

Details of company purchases were supplied by seven of the companies and estimates were made for the others on the basis of the numbers of employees and the type of production carried out. Expenditure related to the previous financial year for which information was available. Thus the information has been treated as and compared with 1976 prices in further analysis.

Estimates of the local expenditure made by the companies which has some impact on the local economy are shown in Table 5.1. Inevitably, wages paid to workers in the factories is the most important injection. The total wages bill was estimated to be £1.54 million. From this was subtracted the taxes paid by the employees and their National Insurance contributions which would have no impact on the local economy. This reduced the total to £1.2 millions.

A substantial sum is also spent locally on the purchase of raw materials. This expenditure is largely made on fish which is purchased

from local sources by several of the companies. While this represents a significant contribution to the local economy, it is unlikely that the absence of processing facilities locally would have a very great impact on this sector, as the fish could be exported to other areas. Thus the local processing industry is, perhaps, reliant upon local primary production rather than vice versa. The benefit of local processing is represented in the increased value of the produce which is exported from the region. For this reason, the impact of the purchase of locally produced raw materials has been excluded. It is estimated that just over £1.7 million is spent locally each year by the companies on local purchases and wages and that about £1.4 million of this contributes to local incomes.

TABLE 5.1 - Factory Expenditure

	Estimated expenditure past financial year £	Proportion of expenditure represented by local value-added L.V.A.	Contribution to local incomes £
Electricity	39,000	0.08	3,120
Oil and Fuels	50,000	0.09	4,500
Telephone and Telex	27,000	0.36	9,720
Postages	6,000	0.58	3,480
Vehicle Operating Costs	45,000	0.17	7,650
Local Hauliers	142,000	0.50	71,000
Other Local Services	120,000	0.50	60,000
Locally purchased materials excluding primary products	51,000	0.20	10,200
Rates and Water	23,000	1.00	23,000
Total Purchases	503,000		192,700
Wages (adjusted for tax and National Insurance)	1,202,000	1.00	1,202,000
TOTAL	1,705,000		1,394,700

Local Impact of Factory Construction

The expenditure on the construction of factories and their extensions was summed for each year and adjusted to 1976 construction costs on the basis of the Index of Costs of New Construction (Department of Environment, 1972 and 1977). From this an average annual expenditure on factory construction was calculated.

On the basis of information supplied by one of the major companies involved in factory construction, the distribution of construction costs was estimated to be as follows :

Thirty per cent of the total contract was expected to go to the main contractor and 70 per cent to sub-contractors. The main contractor was expected to spend 35 per cent of its expenditure on locally employed labour, 5 per cent on locally purchased materials, and the remainder on non-local expenditure. It was expected that half of the sub-contractors would be of local (i.e. within the Eastern Borders) origin and that non-local sub-contractors would make no contribution to local incomes. Of the expenses of the local sub-contractors, 35 per cent was expected to be on locally employed labour and 65 per cent on locally purchased materials.

Thus it is estimated that
Local labour = 22.75 per cent of all expenses
Local Materials Purchase = 24.25 per cent of all expenses
Assuming that local value-added of materials purchase = 20 per cent
Total local value-added of Factory Construction

= 22.75 + 0.2 x 24.25

= 27.6 per cent

$\therefore$ Contribution to local economy

= £184,693 x .276

= £50,975

Costs of Land Purchase and Site Development

The costs of land purchase* and site development* were also brought to 1976 values and an average annual expenditure calculated for the period 1967-1976. The local value-added component for both these expenditures has been taken as 20 per cent. The component for land purchase could vary considerably. For instance, if the seller lived outside of the area, then it would be likely to be very low, whereas if it was somebody local it could be quite high. However, the actual organisation of the transaction is likely to lead to some local expenditure such as in solicitor's fees.

Average annual expenditure on land acquisition 1967-1976 in 1976 prices =

£13,167

L.V.A. = 20 per cent

Contribution to local incomes = £2,633

Average annual expenditure on site development 1967-1976 in 1976 prices =

£19,623

L.V.A. = 20 per cent

Contribution to local incomes = £3,925.

Local Administrative Expenses

Over the period, the Development Commission has contributed to the expenses of the Development Committee of the Eastern Borders Development Association. Over the period 1967 to 1976, the average annual expenditure in 1976 prices has been £7,799, and this amount has been added to the total increase in local incomes.

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* Estimated where full information not available.

Secondary Employment Resulting from Factories

Secondary employment will result in three areas:

(i) in the services sector and in the provision of inputs for the factories.

(ii) in the construction industry.

(iii) in public administration.

The total increase in local incomes resulting from the factory programme derives from the various sources as estimated above.

	£
Factory Wages	1,202,000
Factory Purchases	192,700
Factory Construction	51,000
Land Acquisition	2,600
Site Development	3,900
Development Commission Contribution to Administration	7,800
Total (figures rounded to nearest 100)	1,460,000

This injection leads to a total increase in local incomes of £1,766,600 and so the effect of the multiplier is to raise local incomes by a further £306,600. Further details of the estimation of secondary employment are given in Appendix 5.

Employment in Provision of Factory Purchases

It has been estimated that £192,700 of factory expenditure will go to incomes of those supplying the factories with materials and other supplies. As has been mentioned earlier, the absence of local processing would probably only have a slight effect on primary producers, so that these jobs can not be said to be dependent upon the factories and so this expenditure has been excluded. Local rates are excluded

as these contribute to public administration which is considered below. The total local incomes which are dependent upon the factories therefore is estimated as £169,700.

The proportion of males employed in this sector is estimated on the basis of local employment figures to be 50 per cent. Average wages are assumed to be the same as in the services sector (Department of Employment, 1977).

Employment in provision of factory purchases :

= 54 employees

i.e. 27 males and 27 females.

Employment in Construction and Site Development

On average £184,693 (1976 prices) has been spent on construction each year and an estimated 27.6 per cent of this accrues to local incomes. In addition to this £3,900 from site development will have also increased local incomes. It is assumed that all those hired to carry out construction work are men and that gross weekly earnings in the construction industry were £64.0 in 1976 (Department of Employment, 1977). If the total cost of hiring one employee is £3,754, it is estimated that 15 men would have been employed.

Employment in the Sergices Sector

Further secondary employment will result from the effect of the multiplier which it has been estimated will raise local incomes by £306,600. To this has been added other contributions to local incomes which have not been included above i.e. the contributions from land acquisition and the Development Commission grants to E.B.D.A. This represents a further £10,400.

Employment in the services sector is estimated as 103 jobs. These jobs are assumed to be allocated to males and females on the

basis of the existing proportions in the services sector i.e. 46 males and 57 females. The extent to which this number of jobs is actually created or maintained depends upon the degree of excess capacity in the services sector. Thus it is possible that the extra demand generated by the Development Commission factories could to some extent be met by existing services, with the result that incomes in this sector tend to rise. In fact these jobs are not likely to be new jobs created but old jobs maintained, which might have been lost otherwise due to the declining demand for services locally.

Employment in Public Administration

It seems likely, finally, that the existence of an extra group within the local population will increase the numbers of people required to carry out local administration. The relationship between these two factors is not known but if it is assumed that there is a constant relationship between population size and the number of public administrators, then the effect of an increase in population on public administration can be estimated. It is assumed here that the proportion of the work force engaged in public administration will remain constant.

In 1975 about 6.5 per cent of the work force were engaged in public administration. Thus the 960 jobs resulting from the factory programme directly or indirectly would lead to a further 62 jobs in public administration. Seventy five per cent of employment in public administration in the local areas is of males, so it is assumed that 47 of these jobs will be for males. The total employment resulting from the Development Commission factory programme is summarised in Table 5.2.

TABLE 5.2 - Total Employment Resulting from the Development Commission Factory Programme.

	Male	Female	Total
Factory employees	375	413	788
Local services and distribution	46	57	103
Factory supplies and services	27	27	54
Construction	15	-	15
Public administration	47	15	62
Total	510	512	1022

Alternative Situations of Those Whose Employment is Dependent Upon Factories

The alternative occupations of those employed in the factories is considered earlier. If it is assumed that the secondary employment which is dependent upon the factories is distributed in the same way, their alternative situations would be as shown in Table 5.3.

TABLE 5.3 - Alternative Situations of Employees Dependent upon Factories

	Male	Female	Total
Registered Unemployed	102	62	164
Unregistered Unemployed	10	143	153
'Concealed' Unemployed	15	36	51
People Not Immigrated	107	56	163
People Emigrated	143	72	215
Retired	5	15	20
Employment Available Anyway	128	128	256
Total	510	512	1022

It is likely, that employment in the services sector would not decline by the full extent indicated due to labour immobility, and that especially in the short term, employees and self-employed persons would continue to work but at reduced wages.

These estimates imply that the extra population in the Eastern Borders as a result of the factory programme is:

	Male	Female	Total
Employees who would otherwise have emigrated	143	72	215
Employees who have immigrated	107	56	163
	250	128	378

And that the total number of people who would otherwise have been employed in the Eastern Borders is:

	Male	Female	Total
Registered Unemployed	102	62	164
Unregistered Unemployed	10	143	153
	112	205	317

Population Retained or Introduced

Retaining the assumption that the population whose employment is dependent upon the Development Commission factories is represented by those directly employed in the factories an estimate can be made of the extent to which the population has been raised by the factories.

It has been estimated above that 250 male and 128 female workers, whose employment is in some way dependent upon the Development Commission factories, would alternatively either have left the area, or not have moved into it. On the basis of the survey of employees, it was found that of those males who would not otherwise have been in the area, 66 per cent were married, and of the females 73 per cent. Similarly, it was found that on average, males had 0.93 children and females had 1.2. These employed people therefore represent a total population increase in the area of 378 employees, 258 spouses and 386 children, i.e. 1022 people. This could include some double counting where both spouses are employed and so a minor adjustment can be made, on the same basis as that in Chapter 4.

Thus, the number of spouses may be reduced by 4 and the number of children by 5, resulting in a total population whose presence in the area is dependent upon the factory programme of :

Employees	378
Spouses	254
Children	381
Total	1013

CHAPTER 6

IMPLICATIONS OF FACTORY PROGRAMME FOR POPULATION IN THE EASTERN BORDERS

In Chapter 4 the impact of the factory programme on the total population in the Eastern Borders was estimated. This estimate was based on the total number of jobs arising from the programme and the expected pattern of migration in its absence. This chapter considers the impact on the population in the Eastern Borders as a whole and for the three individual towns (Berwick upon Tweed, Kelso and Eyemouth) for which adequate data were available. It also analyses the implications of the differences in age structure of the retained population and the existing population for future population levels.

More detailed assumptions are required for an examination of populations in individual settlements than for a consideration of the Eastern Borders as a whole, and this, combined with the smaller numbers involved, means that less confidence can be placed on the accuracy of the results.

The assumptions made are as follows :

(a) All secondary jobs estimated to result from factory employment occur in the same town as the factory employment. This will be incorrect to the extent that there is inter-dependency in service provision between towns.

(b) The age distribution of the employees in the secondary jobs is the same as those in the factory jobs and that these are represented by the results of the survey which was undertaken of

factory employees. Similarly, it is assumed that the alternative occupations of secondary employees is the same as those of factory employees.

The age and sex structures of the populations associated with employees were estimated on the basis of the ages indicated on the factory employee questionnaire (see Chapter 4). The ages of the spouses were assumed to fall into the same five year age group as the respondent and the ages of the children estimated on the basis of fertility rates for various age groups, as indicated below:

Proportion of children	Child's age = mother's age less
0.42	20 years
0.51	30 years
0.07	40 years

Both spouses of male and female workers were included in the totals, and children whose parents' age indicated that they were likely to be over fifteen years old, were excluded. This procedure overstates the size of the population who are in any way 'dependant' on the factory employment by including all spouses.

The population associated with the male and female respondents were estimated separately from their replies and the above assumptions. These totals were then raised on the basis of the proportions of male and female employees completing questionnaires, and the totals aggregated. The method gave the results for Berwick upon Tweed reported in Table 6.1.

TABLE 6.1 - Estimation of the Age Structure of Factory and Secondary Employees and their dependants, in Berwick upon Tweed

Age Group	Survey No. of Male Employees	Estimated age distribution of dependants* Male	Female	Total Males (raised by 191/76)	Females	Survey No. of Female Employees	Estimated age distribution of dependants* Male	Female	Total Males (raised by 95/25)	Females	Total Population Males	Females
	(1)	(2)	(3)	(4	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
0- 4	-	9	8	23	20	-	1	2	8	4	31	24
5-14	-	11	10	28	25	-	3	3	11	11	39	36
15-24	24	-	3	60	8	11	-	2	8	42	68	50
25-34	17	-	16	43	40	5	-	4	15	19	58	59
35-44	12	-	9	30	23	4	-	2	8	15	38	38
45-54	7	-	5	18	13	4	-	3	11	15	29	28
55-64	15	-	15	38	38	1	-	1	4	4	42	42
65-74	1	-	1	3	3	-	-	-	-	-	3	3
75+	-	-	-	-	-	-	-	-	-	-	-	-
Total	76	20	67	243	170	25	4	17	65	110	308	280

* It has been assumed that 1/2 children are male. However, because of the slightly higher male birth rate, the male number of children has been rounded up to the nearest whole number.

These calculations and similar ones for the other two towns gave the estimates of the age/sex structures of populations dependent upon factory employees summarised in Table 6.2.

TABLE 6.2 - Estimated Distribution of Population Dependent upon Factory Employees in Berwick, Eyemouth and Kelso, by Age and Sex

Age Group	Berwick upon Tweed		Eyemouth		Kelso	
	Male	Female	Male	Female	Male	Female
0- 4	31	24	26	26	21	16
5-14	39	36	41	41	28	25
15-24	68	50	25	31	55	62
25-34	58	59	37	31	42	40
35-44	38	38	37	34	41	44
45-54	29	28	22	19	21	21
55-64	42	42	14	14	2	2
65-74	3	3	-	-	-	-
75+	-	-	-	-	-	-
Total	308	280	202	196	210	210

This procedure takes no account of the alternative situations of those employed in the factories and the survey can also be used as a basis for the estimation of the population retained in the area as a result of the factory programme. It is assumed that the respondents indicating that they would have left the area, if a job had not been available in the factory in which they worked, and those having moved into the area in order to work in Development Commission factories, represent the characteristics of the population retained in the area. Sixty three respondents fell into one or other of these two categories. Of these, 21 worked in Berwick, 14 in Eyemouth, and 22 in Kelso. It was felt that these numbers were too small to justify the use of this information as a basis for an estimation of the age and sex structures of the population retained in each individual town and so it has been assumed that the characteristics

of the population retained in each town is similar to the characteristics of all those either moving into the area or indicating that they would have moved out if they had been unable to get a job in the particular factory in which they worked. The age and sex structure of the population retained in the Eastern Borders has been estimated from the relevant replies to the employee questionnaire and raised on the basis of the total numbers of employees considered to have remained in, or moved into, the Eastern Borders. This has also been used to provide an indication of the nature of the increased population in the three towns considered above.

TABLE 6.3 – Estimated Distribution of Total Population Increase in the Eastern Borders as a Result of the Factory Programme, by Age and Sex.

Age Group	Males	Females
0- 4	52	45
5-14	92	78
15-24	77	70
25-34	134	109
35-44	99	86
45-54	26	26
55-64	6	6
65-74	-	-
75+	-	-
Total	486	420

The fact that the total numbers retained is smaller than that indicated in Chapter 5 results from the exclusion of 'children' over fifteen. The population retained may now be compared with the estimated population in the Eastern Borders.

Total Population in the Eastern Borders

Estimates of the total population in the Eastern Borders are not currently provided by the Registrar General. It has therefore been necessary to estimate the present population and its age and sex structure from available data. This has been done by dividing the area into four parts; Berwick upon Tweed Borough, Berwickshire District, the part of Roxburgh District previously comprising Kelso Small Burgh and District and the part of Ettrick and Lauderdale formerly part of Berwickshire County. Estimates were made on the basis that each part represented the same proportion of the population as was the case when comparative population statistics were available. The age structures of the populations were assumed to be the same as those most recently available for the most relevant area (Northumberland County, Berwickshire District, Roxburgh District and Ettrick and Lauderdale District). The results are compared with the actual population in the area in the 1971 census in Table 6.4.

TABLE 6.4 - Distribution of Total Population by Age and Sex, 1971 and 1977.

Age Group	Males		Females	
	1971 Census	1977 Estimate	1971 Census	1977 Estimate
0 - 4	1995	1670	1915	1660
5 - 14	4210	4380	4105	4170
15 - 24	3410	4120	3315	3980
25 - 34	2850	3710	2915	3490
35 - 44	3045	3140	3090	3280
45 - 54	3340	3330	3525	3440
55 - 64	3475	3020	4075	3470
65 - 74	2675	2530	3605	3280
75 +	1165	1220	2125	2660
Total	26165	27120	28670	29030

It is unsafe to place too much reliance on the estimates of population because of the need to assume that the age distributions are the same as those in areas for which estimates of age distribution are available. More reliable information will have to await the 1981 census, although this may not provide complete information for the Eastern Borders area as defined for this study.

The estimated 1977 Eastern Borders population is compared with the estimates made of the population retained in the area as a result of the factory programme in Table 6.5.

TABLE 6.5 - Distribution of Estimated 1977 Population and Retained Population by Age and Sex.

Age Group	Total Males	Increase in Males attributed to factories		Total Females	Increase in females attributed to factories	
		Number	per cent		Number	per cent
0 - 4	1670	52	3.1	1660	45	2.7
5 - 14	4380	92	2.1	4170	78	1.9
15 - 24	4120	77	1.9	3980	70	1.8
25 - 34	3710	134	3.6	3490	109	3.1
35 - 44	3140	99	3.2	3280	86	2.6
45 - 54	3330	26	0.8	3440	26	0.8
55 - 64	3020	6	0.2	3470	6	0.2
65 - 74	2530	-	-	3280	-	-
75 +	1220	-	-	2660	-	-
Total	27120	486	1.8	29030	420	1.4

These data indicate that the population as a whole is about one and a half per cent greater than it would have been in the absence of the factory programme. This increase has not been spread evenly throughout the population. Little increase has occurred amongst those over 55, while the greatest increase has been in the 25-44 age group,

and their families. This has resulted partly from the high proportion of factory employees in this age range and partly from the assumption that all potential migrants would reflect the age pattern of all those employed in the factories. This conclusion is consistent with the expectation that people in this age group would be most likely to leave the area in the absence of the factories. The implication for future population age structure is considered below.

Population Implications of Development Commission Factories for Individual Towns

The implications of these estimates of the extent and nature of the population increases in individual towns resulting from the Development Commission factories can be considered on the basis of the assumptions made. The result of these calculations is shown in Table 6.6.

TABLE 6.6 – Estimated Extent and Nature of Population Increase in Individual Towns

Town	Employment in D.C. Factories		Total Jobs		Employees Retained		Population Retained	
	Male	Female	Male	Female	Male	Female	Male	Female
Berwick upon Tweed	191	95	240	131	118	33	199	162
Eyemouth	52	103	79	122	39	31	88	80
Kelso	103	105	139	131	68	33	131	112
Duns and Coldstream	29	110	53	127	26	32	72	69
Total	375	413	511	511	251	129	490*	423*

* Slight variation from the earlier figures results from rounding errors.

The age and sex structures of these retained populations may also be inferred and are presented in Table 6.7.

TABLE 6.7 - Estimated Distribution by Age and Sex of Population Retained in Individual Towns.

Age Group	Berwick upon Tweed		Eyemouth		Kelso		Duns and Coldstream	
	Male	Female	Male	Female	Male	Female	Male	Female
0 - 4	22	19	9	8	14	13	8	7
5 - 14	36	31	18	15	24	21	15	12
15 - 24	32	21	14	16	20	18	11	15
25 - 34	57	45	24	20	36	29	18	15
35 - 44	39	33	19	17	26	23	16	14
45 - 54	11	11	5	5	7	7	4	4
55 - 64	3	3	1	1	2	2	1	1
65 - 74	-	-	-	-	-	-	-	-
75+	-	-	-	-	-	-	-	-
Total	200	163	90	82	129	113	73	68

Age Structures of Individual Towns

The significance of these numbers can be judged in relation to the total populations in each of the towns. Estimates of the populations of the individual towns have not been provided by the Registrar General since local government reorganisation (detailed in Appendix 1). They can be derived on the assumption that they represent the same proportion of total populations for which estimates are currently available. This is likely to underestimate their size as the probable continuing decline of the rural areas will result in an increasing proportion of the population being resident in the towns. However, the extent of this is not known.

Recent estimates of the age and sex structure of the population are available to county level in England and to district level in Scotland. The most recent information concerning individual towns (for local authority areas before re-organisation) derives from the 1971 census. The differences, highlighted in Chapter 2, between

urban and rural age distributions suggest that the earlier, more detailed, age structures from the 1971 census provide a better basis for estimating the present distributions in individual towns than do the more recent distributions for the whole region.

TABLE 6.8 - Age and Sex Distribution, Berwick, Eyemouth and Kelso, 1971.

Age Group	Berwick upon Tweed		Eyemouth		Kelso S.B.	
	Male	Female	Male	Female	Male	Female
0 - 4	8.1	6.9	9.4	8.8	8.2	7.7
5 - 14	15.9	14.2	18.9	15.7	17.6	15.2
15 - 24	13.5	12.8	13.3	13.5	14.0	13.1
25 - 34	11.8	10.6	11.2	10.6	11.8	10.4
35 - 44	12.3	10.4	10.7	10.6	11.4	10.6
45 - 54	12.4	11.7	12.0	11.7	12.2	12.1
55 - 64	12.6	13.8	12.4	11.7	11.8	12.5
65 - 74	9.6	12.1	8.6	10.6	7.8	10.4
75 +	3.8	7.4	3.4	6.6	5.1	8.1

SOURCE : Population Census, 1971

Combining the age and sex distributions of Table 6.8 with the following detailed assumptions produced the estimates in Table 6.9.

TABLE 6.9 - Estimated Populations of Berwick, Eyemouth and Kelso in 1977.

Age Group	Berwick upon Tweed		Eyemouth		Kelso S.B.	
	Male	Female	Male	Female	Male	Female
0 - 4	434	428	125	137	188	205
5 - 14	851	882	251	245	404	404
15 - 24	723	795	177	211	321	348
25 - 34	632	658	149	165	271	277
35 - 44	659	646	142	165	261	282
45 - 54	664	727	159	183	280	322
55 - 64	675	857	165	183	271	333
65 - 74	514	751	114	165	179	277
75+	203	460	45	103	117	215
Total	5355	6204	1327	1557	2292	2663

These estimated populations may be compared with the population retained in the individual towns, as in Table 6.10.

TABLE 6.10 – Distribution of Estimated 1977 Population and Retained Population, by Age and Sex, in Berwick, Eyemouth and Kelso.

Age Group	Berwick upon Tweed						Eyemouth						Kelso					
	Males			Females			Males			Females			Males			Females		
	Total	Increase attributed to factories		Total	Increase attributed to factories		Total	Increase attributed to factories		Total	Increase attributed to factories		Total	Increase attributed to factories		Total	Increase attributed to factories	
	No.	No.	per cent	No.	No.	per cent	No.	No.	per cent	No.	No.	per cent	No.	No.	per cent	No.	No.	per cent
0- 4	434	22	5.1	428	19	4.4	125	9	7.2	137	8	5.8	188	14	7.4	205	13	6.3
5-14	851	36	4.2	882	31	3.5	251	18	7.2	245	15	6.1	404	24	5.9	404	21	5.2
15-24	723	32	4.4	795	21	2.6	177	14	7.9	211	16	7.6	321	20	6.2	348	18	5.2
25-34	632	57	9.0	658	45	6.8	149	24	16.1	165	20	12.1	271	36	13.3	277	29	10.5
35-44	659	39	5.9	646	33	5.1	142	19	13.4	165	17	10.3	261	26	10.0	282	23	8.2
45-54	664	11	1.7	727	11	1.5	159	5	3.1	183	5	2.7	280	7	2.5	322	7	2.2
55-64	675	3	0.4	857	3	0.4	165	1	0.6	183	1	0.5	271	2	0.7	333	2	0.6
65-74	514	–	–	751	–	–	114	–	–	165	–	–	179	–	–	277	–	–
75+	203	–	–	460	–	–	45	–	–	103	–	–	117	–	–	215	–	–
Total	5355	200	3.7	6204	163	2.6	1327	90	6.8	1557	82	5.3	2292	129	5.6	2663	113	4.2

The factory programme has had a greater proportional impact on the populations of individual towns than on that of the area as a whole, which includes all the rural area. This effect could have been exaggerated, in some cases, by the assumption that all the secondary employment estimated to have been created locally will have occurred in the same town as the factory to which it is related. The programme does, however, appear to have made a substantial contribution to particular age groups, namely between 25-44, as was the case indicated above for the Eastern Borders. The impact has been particularly significant in Eyemouth, although the smaller total numbers involved suggest that less reliance can be placed on this figure.

Longer Term Implications of Age and Sex Structure Differences

In order to examine the longer term implications of these population changes, projections have been made of the total population of the area, and of each individual town, as well as of the popualations considered to have been retained through the factory developments. No allowance has been made for migration in the future, and so the populations estimated are unlikely to be those actually living in the Eastern Borders. The contribution of the present differences in age and sex structure is, however, highlighted by this process.

Population Projection

A computer programme was written to project male and female population cohorts through 5 five-year periods by applying age-specific death and birth rates. The mortality rates used were the averages of those applying to England and Wales and Scotland, for the base year 1976/77, supplied by the Office of Population Censuses and Surveys (1978). These were adjusted to five-year survival rates. An equivalent annual improvement factor was also incorporated. The fertility rates derived from the same source and again an average of England and Wales and Scotland was applied. Separate fertility rates were applied to three female cohorts, age 15-24, 25-34 and 35-44

respectively in 1977 (the last group including an adjustment for births to women over 44). Expected future fertility rates were applied as indicated by the O.P.C.S. It was assumed that the proportion of male births would also be the same as that for England and Wales and Scotland.

The population estimated to have been retained in the whole of the Eastern Borders and in the towns of Berwick upon Tweed, Eyemouth and Kelso were projected through a fifty-year period. The results are presented in Table 6.11.

The results indicate that the populations retained will, as a result of their age structure, comprise an increasing proportion of the population over the first two or three decades shown. After thirty years the proportion tends to fall slightly. The estimated existing populations in the area are found to decrease over the first 10-20 years following which they tend to increase steadily, although in the cases of the overall population in the Eastern Borders and that in Berwick upon Tweed, have failed to regain their initial level by the end of the fifty-year period. A similar pattern was found with the population of Berwick upon Tweed Borough by Northumberland County Council (1976).

The Population of Working Age

It seems unlikely that there will be significant net migration into the areas under study, and so, retaining the assumption of no net out-migration, the implications of these population projections for the availability of labour in the area can be examined. It should be noted, however, that it is the population of working age which is particularly likely to experience significant net out-migration.

TABLE 6.11 – Ten-year Projections of Total and Retained Population in the Eastern Borders and for Berwick, Eyemouth and Kelso.

	Eastern Borders population			Berwick upon Tweed population			Eyemouth population			Kelso		
Year	Total Retained	Total	%	Total Retained	Total	%	Total Retained	Total	%	Total Retained	Total	%
0	906	56550	1.6	363	11559	3.1	172	2884	6.0	242	4955	4.9
10	1035	54180	1.9	409	11053	3.7	198	2814	7.0	275	4765	5.8
20	1147	54281	2.1	449	11046	4.1	221	2888	7.7	306	4838	6.3
30	1206	54511	2.2	469	11134	4.2	233	2975	7.8	322	4932	6.5
40	1224	55024	2.2	473	11302	4.2	238	3067	7.8	327	5042	6.5
50	1228	55515	2.2	472	11495	4.1	240	3151	7.6	329	5151	6.4

TABLE 6.12 - Ten-year Projections of Total Population by Sex, in the Eastern Borders, Berwick, Eyemouth and Kelso.

Populations aged 15-64

	Eastern Borders		Berwick upon Tweed		Eyemouth		Kelso	
Year	Males	Females	Males	Females	Males	Females	Males	Females
0	17320	17660	3353	3683	792	907	1404	1562
5	17528	17728	3343	3632	811	923	1430	1571
10	17555	17683	3375	3633	841	952	1461	1593
20	17474	17442	3378	3584	872	962	1483	1588
30	17675	17535	3484	3633	927	992	1548	1621
40	17748	17544	3587	3672	977	1011	1604	1646
50	17779	17515	3660	3681	1006	1019	1642	1655

In Table 6.12 the projections of total populations of working age are reproduced. Table 6.13, deduced from Table 6.12 shows the net change over projection periods, in the population. Particularly notable here is the continued concentration of population in the towns whilst that of the whole region actually declines in the second decade. The increase in the next decade follows from the entry of the grandchildren of those originally retained by the factories, joining the workforce.

TABLE 6.13 - Ten-year Projections of Net Change in Populations, aged 15-64, by Sex, in the Eastern Borders, Berwick, Eyemouth and Kelso

	Eastern Borders		Berwick upon Tweed		Eyemouth		Kelso	
Period	Males	Females	Males	Females	Males	Females	Males	Females
0 → 5	+ 208	+ 68	- 10	- 51	+ 19	+ 16	+ 26	+ 9
5 → 10	+ 27	- 45	+ 32	+ 1	+ 30	+ 29	+ 31	+ 22
10 → 20	- 81	- 241	+ 3	+ 49	+ 31	+ 10	+ 22	- 5
20 → 30	+ 201	+ 93	+ 106	+ 49	+ 55	+ 30	+ 65	+ 33
30 → 40	+ 73	+ 9	+ 103	+ 39	+ 50	+ 19	+ 56	+ 25
40 → 50	+ 31	- 29	+ 73	+ 9	+ 29	+ 8	+ 38	+ 9

The cumulated population change, in Table 6.14, underlines the cyclical nature of population increase arising from the initial change due to the factories.

TABLE 6.14 - Ten-year Projections of Population (aged 15-64) Cumulative Change, in the Eastern Borders, Eyemouth and Kelso.

	Eastern Borders		Berwick upon Tweed		Eyemouth		Kelso	
Year	Male	Female	Male	Female	Male	Female	Male	Female
5	+208	+ 68	- 10	- 51	+ 19	+ 16	+ 26	+ 9
10	+235	+ 23	+ 22	- 50	+ 49	+ 45	+ 57	+ 31
20	+154	-218	+ 25	- 99	+ 80	+ 55	+ 79	+ 26
30	+355	-125	+131	- 50	+135	+ 80	+144	+ 59
40	+428	-116	+234	- 11	+185	+104	+200	+ 84
50	+459	-145	+307	- 2	+214	+112	+238	+ 93

As noted above, these actual results are unlikely because selective in- and out-migration are likely to 'smooth' the age distributions and reduce the discontinuity resulting from the factory programme. It is also important to note that these projections assume no further industrial growth in the region. Further growth would, of course, lead to a different size and age structure of population.

CHAPTER 7

A FINANCIAL EVALUATION OF THE FACTORY PROGRAMME

Enough information has been assembled so far to allow an estimate of the costs and returns which will have accrued to the Exchequer as a result of the factory programme. Central estimates of costs and returns are presented here and in the following chapter their sensitivity to variation in underlying assumptions is tested.

Because factories are still under construction and awaiting occupation, the assessment will be made, not of all the expenditure which has been committed up to this point, but of all the factories which were occupied prior to the summer of 1977. While this therefore will not represent a final assessment of the entire project, it seems unrealistic to include the costs of building factories which have not yet been occupied and where there has been no opportunity for any returns to be realised. One factory which was completed in 1974 was only just being occupied at that time as it was decided that extensions should be built prior to occupation. As this factory has remained empty for nearly three years, allowance was made for the cost of the committment of this capital over this period. This may be taken as the rental value of the factory, discounted over two years to allow for the rent free period. The total capital cost of the factory is not included as there are no returns included from rental and employment.

The total costs to the Exchequer of the factory programme may be divided into a number of groups :

(i) construction costs of factories met by the Development Commission;

(ii) costs of land acquisition and site improvement;

(iii) construction costs of extensions met by the Department of Industry;

(iv) grants made to the companies resulting from Government regional policy;

(v) costs of guaranteeing housing for incoming workers met by the Development Commission;

(vi) administrative costs of the various Government agencies involved in the programme.

The returns which the Exchequer receives as a result of the construction of these factories arise from a number of sources:

(i) rentals paid by the factory tenants, or the price, where factories have been purchased;

(ii) reduction in unemployment benefits claimed by those who were registered unemployed prior to taking factory employment;

(iii) increased taxation resulting from the increases in income of those employed in the factories;

(iv) taxation of profits earned by the companies in the factories.

Exchequer Costs

Information has been received on the majority of the costs of construction of the factories and extensions, of land acquisition and site improvement and of guaranteeing housing rents to local authorities and estimates have been made where information has not been forthcoming. The amount of grants received has been made available by some of the companies and on this basis averages

have been used to estimate grants received by the companies for which information is not available. Regionsl Employment Premium (R.E.P.) and Selective Employment Tax (S.E.T.) payments have been estimated on the basis of the rates which have been payable over the period. However R.E.P. was ended on January 1977 and the analysis has assumed that this will not be replaced. The costs of administering the programme would be met largely by the Eastern Borders Development Association, although some costs would have been incurred by the Development Commission itself, English and Scottish Industrial Estates and other Government departments. An indication of administrative cost is the grant paid by the Development Commission to the Eastern Borders Development Association. This represents half of the costs of the E.B.D.A. Development Committee which, however, did not spend all of its time on the Development Commission factory programme. These costs have been included as a cost of the factory programme. It has not been possible to make any estimates of the actual costs involved in administering the factory programme and as such it seems likely that this represents an underestimate.

Information has been provided concerning the rental income received from the factories and the dates upon which these rents are due for revision. The actual rents paid have been estimated up to 1977 and from that date, it has been assumed that they will continue at the same real level. Rental payments up to that date have been converted into 1976 prices on the basis of the G.D.P. Deflator.

It will be assumed that the level of employment in the factories will increase over the next five years to the levels indicated by the majagers and that this level will be maintained over the rest of the period. The extra employees required for this expansion will be assumed to arise from the same sources as indicated by the survey of employees. An estimate of the total number of previously registered unemployed people can be made and the

savings to the Exchequer resulting be estimated on the basis of average unemployment benefits paid. The employee survey also indicates the extent to which individuals have become financially better off through employment in the factories and this information can be used to estimate the extra taxes which are paid by the employees. The level of profits of the companies yielding tax to the Exchequer is not known and has not been included in the analysis. However, between 1970 and 1972 capital expenditure on machinery and plant in manufacturing and certain other industries in the development areas was allowed free depreciation. The cost to the Exchequer of this scheme is also not known but will have cancelled out some of the taxes which would otherwise have been paid.

Up until 1977, total Exchequer costs have been estimated as : (1976 prices)

(i)	Factory Construction (including extensions) Land Acquisition and Site Development :	£2,174,830
(ii)	Regional Grants and Payments and other expenses :	£607,891
(iii)	Total Costs :	£2,782,721

The costs of factory construction ((i) above) per job created directly in the factories is therefore £2,760 per employee. The numbers indirectly employed has been considered above to be 234; the total number of jobs depending upon the factories therefore being 1022. The cost of factory construction per total number of jobs dependent upon the factories falls to £2,128. Finally, the cost per person retained in or brought into the Eastern Borders is calculated on the basis of the estimates made of alternative occupations of employees and of their family size. This suggested that an extra population of 1013 is in the area which represents a cost of £2,145 per person. These costs are listed in Table 7.1 below, in 1976 and 1970 prices, in order to facilitate comparison with the costs estimated in Mid-Wales.

TABLE 7.1 - Factory Construction Costs per direct employee, per total job created and per person otherwise outside the area.

	Eastern Borders 1976 prices	Eastern Borders 1970 prices	Mid-Wales* 1970
Cost of Factory Construction			
per direct employee	£2760	£1226	£876
per total jobs created	£2128	£ 945	£643
per person otherwise outside the area	£2145	£ 952	£434

* Development Commission (1972)

If the costs of actually building the factories is considered, i.e. excluding land acquisition and site development, the cost per direct employee falls to £2344 (£1041 in 1970 prices). The reason for the relatively higher cost per person retained or introduced into the area results from the lower proportion of employees who are expected to have migrated in the absence of the factories. This was estimated as 61 per cent of employees in Mid-Wales, compared with 36 per cent in the Eastern Borders. This result could be associated with the high levels of unemployment currently being experienced especially in urban areas.

The total Exchequer costs have also been estimated on the same basis. Thus the total Exchequer cost per direct employee is found to be £3531 (1976 prices) (£1568 (1970 prices)), per total job created £2723 (£1209 (1970 prices)), and per person otherwise outside the area £2747 (£1220 (1970 prices)).

Returns to the Exchequer from personal incomes

The changes in incomes from factory employment were estimated for three groups:

(i) previously registered unemployed;

(ii) school leavers and previously unregistered unemployed;

(iii) those moving from other employment.

(i) 30 respondents (11.7 per cent) in the sample of employees indicated that they were registered as unemployed prior to taking up employment in the factories. This group will make a contribution towards the Exchequer in two ways: firstly by savings in unemployment benefits paid out and secondly in the increase in taxes paid. This second contribution has been estimated together with the taxes paid by other groups who were not earning prior to taking up employment.

Information on unemployment benefits saved, including the earnings related supplement, (on the assumption that those unemployed in the Eastern Borders would receive the average levels of payment, as indicated in a 4 per cent survey in May 1976) has been used to estimate the savings in Exchequer cost resulting from lower levels of umemployment. These payments were as follows:

	Estimated average weekly Payments to persons in receipt of unemployment benefit
Males with :	
No dependants	£13.16
Adult dependants only	£21.59
Adult dependants and child(ren)	£25.95
Married Women	£ 9.56
Other Women	£11.84

SOURCE : D.H.S.S. (1977)

The analysis has also been extended to take into account indirect taxation and other benefits received.

(ii) The school leavers and previously registered and unregistered unemployed would not have been earning prior to taking up employment in the factories and so the total amount which they are paid represents an increase in taxable income, and the Exchequer would receive taxes on this.

In the sample of employees, 38 (15 per cent) (22 males and 16 females) indicated that they were school leavers when taking up employment, and 24 (2 male and 22 female) that they were unregistered unemployed. This means that 92 employees were previously earning no incomes. The taxes which the Exchequer would receive from these incomes were estimated from the earnings figures which were supplied by the managers. The tax allowances which each individual would be entitled to were allocated on the basis of sex, marital status and numbers of children (at the rates applying in 1976/77 tax year). Married women were taxed as single people. The remaining income was then taxed at a rate of 35 per cent. (This excludes other tax allowances such as on mortgages.)

The estimated gross income of this group in the sample was £258,400 per annum which would yield £64,070 in taxes (an average rate of 25 per cent which appears to be above average tax rates generally). Assuming that the sample represents 33 per cent of all employees, this would represent a total of £194,152 per annum total income tax received.

(iii) The remaining 164, who indicated that they were employed prior to taking up work in Development Commission factories were asked to indicate how their take-home pay changed as a result of this. 143 of these supplied information on both the change in income and the length of time during which they had been working in the factory. Of these, 47 had had a reduction in their income. Overall, nevertheless, there was an increase in income.

TABLE 7.2 - Changes of Income in Relation to Length of Employment

Length of working in factory	Number of Employees in Sample	Total Income Change of Group (£/week)
0 - 1 year	54	+ 40
1 - 2 years	18	+ 82
2 - 3 years	18	+ 68.5
3 - 4 years	27	+ 87.5
4 - 5 years	8	+ 13.5
5 years +	18	- 14.5
All respondents	143	

If 164 out of 260 were in this position this would represent an increase in take home pay of those employed of about £318 per week or £16,520 per annum.

If this figure for the employee sample is raised to the level of the total estimated number of employees, it represents an increase of take home pay of £963 per week.

Assuming that this increase in take home pay was received after paying the full rate of tax (35 per cent), as it represents an increase in incomes, the total tax received by the Exchequer on this amount would be

$$\frac{50,066}{0.65} - 50,066 = £26,959 \text{ per annum}$$

Further Exchequer Expenditure Implications Resulting from Changes in Personal Incomes

The increase in incomes which has resulted from the factory programme will also have implications for indirect taxation and the provision of other government benefits. Information is provided by

the Central Statistical Office (Stephenson, 1978) on the redistribution of income through taxes and benefits for different household income groups, divided into quintiles and deciles. The figures are derived from the Family Expenditure Survey and apply to the position in 1976. The analysis provides a rough guide to the extent to which beneficiaries gain from government expenditure and to which other groups contribute. The benefits of some items of expenditure, such as on defence and law and order, have not been allocated to particular groups and similarly, the sources of some government income, such as corporation tax, have not been attributed. The analysis has been disaggregated by household composition and begins with original income. Firstly, allowances are made for cash benefits and direct taxes, this is then adjusted for subsidies and indirect taxes and finally benefits in kind are included. The level of the adjustments which are made depend partly on actual expenditure patterns and partly on family composition. The objective here is to examine the implications for the exchequer of a rise in income of a particular group, so that differences which result from the variation in family composition between groups are not relevant.

It was assumed that those who were already in employment prior to taking up jobs in the Development Commission factories would have no significant effect on government expenditure and receipts beyond that accounted for elsewhere. The assumption was broadly supported by the employee survey which indicated that the average rise in income for this group was about £2 per week (current prices). This change is too small to result in a change of income group in the Central Statistical Office analysis.

It was necessary to estimate into which income group other factory employees, who had not previously been in employment, would fall before and after they took up work. Information relating to them was available for individuals, rather than for households, and so it was necessary to assume those to be equivalent. This is likely to underestimate the actual incomes of the households in question.

Individual Items of Receipt and Expenditure

Allowance has already been made for the reductions in unemployment benefits paid out and for changes in direct taxation. The objective here is to make further adjustments which result from the employment of alternatively unemployed people. Average factory earnings of those people who were previously unemployed were estimated on the basis of the type of work which they did and the earnings for each category of employee as indicated by the factory managers. This was then adjusted to 1976 values and each employee was placed in the relevant income group. They were also subdivided into three categories on the basis of household composition, again according to the replies made in the employee survey, to coincide with the groupings in the C.S.O. analysis.

Following this, for each income group and household composition category, a figure was derived from the C.S.O. data of the effect which a move from the income group into which their estimated unemployment benefits would place them, to their present income group, would have on exchequer costs and receipts. This took into account direct benefits (including family income supplement and supplementary benefit), subsidies (on housing and food), and indirect taxes (estimated from the pattern of expenditure indicated in the Family Expenditure Survey). Local authority rates on dwellings were included. Indirect taxes on intermediate goods and services, including employers' contributions to National Insurance, were allowed for on the basis of estimates of the relation between intermediate production and final demand and direct benefits in kind (this incorporated welfare foods, which includes an element which is related to the income of the recipient). The National Health Service cost was estimated according to households on the basis of the age and sex of their members and so was excluded. Similarly, the estimate of education costs was excluded as the largest component of benefits from education resulted from the age structures of the households, and while this does change between groups, it does not change when the head of the household takes up employment.

This analysis also excludes family allowances, which are not related to income levels, as well as pensions, which are unlikely to be important for people taking up employment, and sickness and injury benefits. It has not been possible to separate payments of unemployment benefit and those for sickness and injury. These latter benefits have been excluded but are unlikely to be significantly different at different income levels.

Each respondent who indicated that he was previously unemployed was allocated to an original income group on the basis of the unemployment benefit, which it is expected that he would have received on the basis of his sex and family, and to a current income group on the basis of his replies concerning his type of work and the average wages paid. The implications of the move from his original group to his current income group for the categories of exchequer expenditure and receipts included here were estimated and summed for the group as a whole. The results showed that for the 29 respondents who indicated that they were previously unemployed and who supplied sufficient information for this analysis, an amount of £4274 p.a. would be saved by the Exchequer. This was raised, to take account of all factory employees, to £13,400 p.a. This figure was then included in the calculations as a benefit to the Exchequer of the factory employment.

The result of these rather complex adjustments has been incorporated in the cash flows which are reported in Appendix 6. These flows have been discounted at 10 per cent over various time horizons. The resulting present values are presented, together with internal rates of return, in Table 7.3.

TABLE 7.3 - Discounted Cash Flow Analysis of Exchequer Costs and Returns

Time Horizon	Present Value of Costs £	Present Value of Returns £	Net Present Value £	Internal Rate of Return (per cent)
10 years	1,848,380	581,934	-1,266,450	- 38.6
25 years	1,976,790	2,058,900	82,106	10.5
50 years	2,006,140	2,460,160	454,018	12.1

It will be noticed that the present value of costs increases slowly as the time horizon is extended beyond the 10-year period whereas the present value of returns to the Exchequer grows substantially between 10 and 25 years, reflecting the continued growth of tax revenue from the increases in employment beyond the 10-year period. Reference to Appendix 6 will show that the majority of costs are incurred early in the discount period whereas the benefits grow to nearly £½m over 15 years. As a result the net present value discounted over 10 years is a negative sum - that is a net cost to the exchequer - but thereafter it becomes positive as the benefits from increased taxation accrue to the Exchequer. These differences are reflected also in the internal rate of return which shows a nearly 40 per cent negative rate over 10 years but a positive rate of more than 10 per cent for 25 years and above. Thus, if the Exchequer regarded itself as a private firm and was concerned to achieve a 10 per cent rate of return on its outlays, and was prepared to discount them over a 25-year period, the factory developments would seem to be an attractive investment. It should be noted, however, that these internal rates of return over the longer periods are substantially less than were obtained for Mid-Wales.

The negative net present value, discounted over ten years could be taken as an indication of the 'cost' of the programme and a cost per factory job calculated. Such a calculation is similar to those presented by The Treasury (1976) and the result in this case is £1607 per job.

Such a presentation might be taken as a measure of the cost/effectiveness of the factory establishment operation. However it is by no means the only such measure possible. For example the denominator of the cost/effectiveness measure could be any one of :

- number of direct factory jobs
- total number of programme jobs (direct and indirect)
- total direct factory jobs which would not be present in the absence of the programme

- number of primary and secondary workers who would have been employed but for the factory programme
- number of people who would have been outside the region but for the factory programme
- cumulated sum of annual full-time employee equivalents over discount period.

Moreover it will be noticed that this list is not exhaustive. Neither does it include some of the measures which have been calculated elsewhere in the study. The essential point is that the measures should relate to the objectives of the Development Commission in deciding to initiate the factory programme. The reports of the Commission suggest that the establishment of factories is seen as a means towards the end of slowing the rate of rural depopulation. However it is also possible to take the wider aims of the Commission as being 'to benefit, directly or indirectly, the rural economy of England....' (Development Commission 1978). Under this wider objective a number of goals might be pursued. The Commission might be concerned to establish jobs in factories, to generate secondary employment and to reduce the rate of rural depopulation.

Presumably these objectives would be pursued with the instrument of the factory programme over a finite period. Clearly it is of more interest to create jobs now than at some future date. The objectives will also be pursued subject to the budget constraint within which the Commission normally operates and their pursuit will, of course, be constrained by other factors such as the availability of land and the administrative resources at the Commission's disposal. These three objectives whilst not mutually exclusive, would nevertheless conflict with each other to some extent. Clearly the Commission may have a view as to the relative desirability of retaining population per se, it may equally, in times of high unemployment, give more emphasis to reducing the level of unemployment in rural areas at the expense, perhaps, of other objectives such as encouraging people to stay in rural areas. It is emphasized that conflicts between objectives may be very slight and may only arise in narrowly defined situations. Nevertheless, in the absence

of a precise statement of the reasons why the factory programme was set up it becomes very difficult to determine which mixture of objectives was being pursued and hence to evaluate the programme after the event.

In this state of uncertainty it has been decided to choose a number of possible denominators of the cost-effectiveness fraction and to present these for consideration. Table 7.4 contains measures of effectiveness of the factory programme in terms of numbers of employees and people retained in the Eastern Borders and then converts these into measures of cost-effectiveness by dividing them into the costs or benefits accumulated over various time horizons. In all cases cost-effectiveness is measured in terms of the net present value to the Exchequer over each time horizon. This sum, which comes direct from Table 7.3, is then divided by the measured effectiveness of the programme. The result is seen in the bottom three rows of Table 7.4 where the estimates corresponding to the ten year time horizon are all negative, reflecting the net cost to the Exchequer over that period. In the next two rows the measures become positive, because returns to the Exchequer are positive, and in the final row they are larger than in the penultimate row.

The first six columns in the table relate to cost-effectiveness measured at a point in time; thus all of the measures of the success of the programme are related to the end of a discount period and do not reflect the length of the discount period or the rate of change within it. However the seventh column, which relates costs and revenues to employee equivalents, is different in that it measures the whole labour input employed by the factories over the discount period in question. Thus the difference between the 25 and the 50 year time horizon is much less in the last column than in any of the preceding columns.

TABLE 7.4 - Exchequer Cost-effectiveness of the Factory Programme

Time horizon years	Denominator units	Direct jobs	Direct & indirect jobs	Direct jobs otherwise absent	Workers otherwise unemployed	Employees otherwise outside region	Population otherwise outside region	Cumulated annual employment (person-years)
10	Number	788	1022	591	317	378	1013	3119
	Cost (-)/ Benefit (+) per unit - £	-1607	-1240	-2145	-3998	-3353	-1251	-406
25	Number	1096	1421	767	441	526	1409	19021
	Cost (-)/ Benefit (+) per unit - £	+75	+58	+107	+186	+156	+58	+4
50	Number	1096	1421	767	441	526	1409	43762
	Cost (-)/ Benefit (+) per unit - £	+414	+320	+592	+1030	+863	+322	+10

Which of these measures is seen as the best indicator of the performance of the factory programme is a matter which can perhaps best be evaluated by the Commission itself. If the objective of the programme is simply the establishment of the maximum number of jobs in factories then the first column will be seen as relevant, if total employment both direct and indirect is the objective then the second column will be relevant and so on. In fact the first two columns can perhaps be ruled out most easily on grounds of logic and we could move on to the following columns which do offer various measures related more precisely to the impact of the factory programme. The number of jobs which would not have been present without the factory programme, the number of workers who would otherwise have been unemployed, or the number of employees who would otherwise have been outside the region, or the total population similarly placed, all reflect different objectives towards which the factory programme could have been aimed. However they measure progress towards these objectives at one point in time only - namely at the end of the relevant discount period. It may well be argued, particularly if the Commission is concerned to create a total volume of employment, even if as a means of retaining population, that the final column is the most relevant measure of the performance of the factory programme.

There is the related question of the period over which expenditures and revenues should be discounted. This, too, is a matter of the objectives which the Development Commission is pursuing and the relative importance they attach to the creation of jobs or the retention of the population within a 10-year period, a 25-year period or even longer. Naturally, as this is an ex post study it is not possible to state now what were the precise objectives of the Development Commission at the time this factory programme was set up. Consequently it is not possible to be more precise as to whether the programme can be seen as a success or not. This question of the success of the factory programme is re-opened in the light of the calculations presented in the next chapter, relating to social costs and benefits.

CHAPTER 8

THE EFFECT OF ALTERNATIVE ASSUMPTIONS ON THE FINANCIAL EVALUATION OF THE FACTORY PROGRAMME

In Chapters 5, 6 and 7, certain central estimates have been made of the impacts of factory development in the Eastern Borders. These were derived from the data using a number of assumptions concerning the employment and population effects. In this section, the parameters deriving from those assumptions are varied in order to test the sensitivity of the final results. In order to undertake this exercise, it was necessary to construct a model of the impacts of the factories in the Eastern Borders. This described the relationships shown in Figure 8.1 which summarises the procedure followed in Chapter 5.

The Pattern of Impact of the Factory Programme

The initial impacts of the factory programme derive from the activities of the factories themselves, and their construction. Part of the expenditure associated with this is retained in the Eastern Borders as local incomes, the proportion being estimated on the basis of the 'local value added', which was calculated in Chapter 5. These local incomes lead to employment both directly and indirectly, through the workings of the regional income multiplier. Employment therefore results in sectors supplying factory inputs and in construction, as well as in the factories themselves. The extent to which employment results from the increase in incomes in the local services sector will depend upon the extent to which there exists any surplus capacity. If there is none, then increases in incomes will result in higher employment levels. The impact on employment in public administration has been assumed to depend on a fixed relationship between total employment and employment in public administration. This has enabled estimation of the employment change in this sector.

IMPACT OF FACTORIES IN THE EASTERN BORDERS

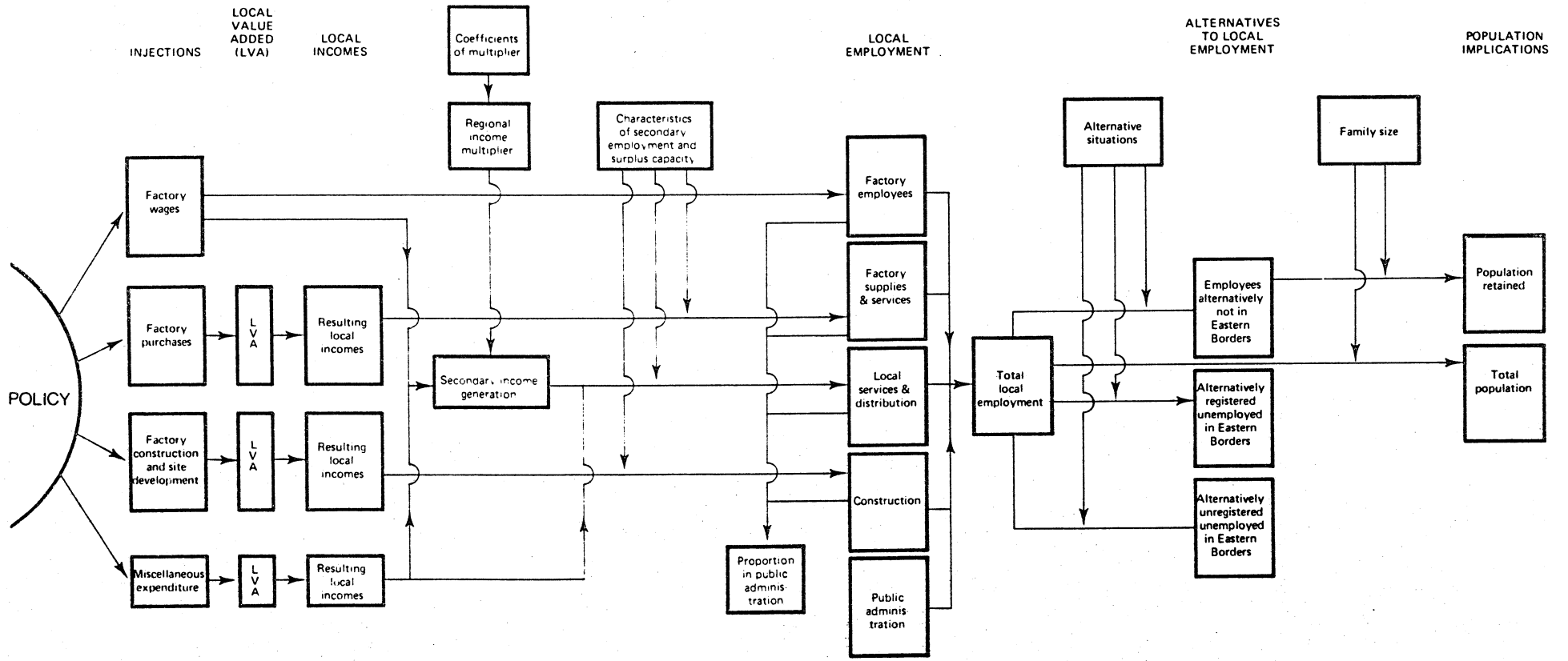

Figure 8.1

The various aspects of employment may then be summed to provide an assessment of the total effect of factory activity in the Eastern Borders. Certain assumptions have been made about the activities of employees in the absence of the factory programme, and these may be applied to determine the alternative occupations of those whose employment depends upon the factories. An assumption about the likely soze of family associated with employees may then be used to assess the population implications of the programme.

In the initial analysis, it was assumed that all the value added in the Eastern Borders on factory supplies and services and on local services and distribution, after a small adjustment for earnings to factors other than labour, would contribute to creating new jobs or maintaining existing jobs which would otherwise have been lost. The proportion of male and female jobs resulting from this expenditure was assumed to be the same for the new employment as for existing employment. The number of jobs was found by dividing the total value by the cost of employing somebody in each sector (see Appendix 5). However, it is possible that some of this expenditure will in fact result in higher incomes in this sector rather than new or retained jobs. The extent to which this is the case will depend on the degree of surplus capacity in each sector. In the initial estimation, it was assumed that there was none. In this analysis, the effect of introducing surplus capacity into these sectors are examined. It appears likely that there should be some degree of surplus capacity in the local services sector due to the loss of population which has occurred in the area in the past.

Sensitivity of Analysis to Change

The impact which a variation in the parameters has, will depend upon its position in the chain of analysis described above. For instance, an alteration in the pattern of factory purchases has a far more widespread impact than a change in the estimated size of family.

A number of variations have been made, and their impact on the total employment of males and females resulting in the Eastern Borders from the factory programme, the numbers who it is considered would alternatively be unemployed and the numbers of people who, it is estimated, would have left the Eastern Borders in the absence of the programme. (This includes the total number of children rather than those estimated to be under sixteen.) Some results are shown in Table 8.1.

There is no firm basis for selecting the extent to which the parameters should be varied and the variations made have been selected on a somewhat arbitrary basis. The variations were mostly 10 per cent movements above and below the central estimates, although the impacts of 50 per cent surplus capacity in the services sector and a 50 per cent lower increase in the level of employment in public administration were investigated. The analysis indicates that the most important single assumption influencing employment levels is the value of the regional income multiplier. A 10 per cent variation in this leads to a 6 per cent variation in the total level of employment resulting from the factory programme. The most important coefficient of the multiplier is the propensity to import and a 10 per cent variation in this leads to a 2.5 per cent change in the level of employment. The introduction of 50 per cent surplus capacity in the local services sector has a slightly smaller impact than the 10 per cent variation in the multiplier, this leads to a 5.4 per cent reduction in employment. The other variations have a smaller impact. The assumptions in the analysis which have most influence on the size of the population retained are those which influence it directly; namely the average size of family which is retained when an individual decides to remain in the area, and the assumed probability that he will do so. While there is some direct evidence to support the estimate of the former figure, the latter is subject to some uncertainty.

TABLE 8.1 - Sensitivity of the Analysis to Variations in Individual Parameters.

Changes in Parameters	Total Employment		Alternatively unemployed		Population increase	% Change in population increase from central
	Male	Female	Male	Female		
Central estimates	510	512	112	204	1013	0
Factory Purchases +10%	513	515	113	206	1019	+ 0.6
Factory Purchases -10%	506	508	111	203	1005	- 0.8
Local Propensity to import +10%	498	498	110	199	987	- 2.6
Local Propensity to import -10%	523	527	115	211	1040	+ 2.7
Regional Income Multiplier +10%	538	545	119	218	1072	+ 5.8
Regional Income Multiplier -10%	481	480	106	192	953	- 5.9
25% Surplus Capacity in Local Services	497	497	109	199	986	- 2.7
50% Surplus Capacity in Local Services	484	483	107	193	959	- 5.3
25% Surplus Capacity in Industrial Services	502	505	110	202	998	- 1.5
50% Less Employment in Public Administration	486	504	107	202	991	- 2.2
Probability of Male and Female Migration +10%	510	512	112	204	1114	+10.0
Probability of Male and Female Migration -10%	510	512	112	204	911	-10.1
Family Size +10%	510	512	112	204	1114	+10.0
Family Size -10%	510	512	112	204	911	-10.1

Alternative Levels of Factory Employment

The alternative situations of those whose employment either directly or indirectly results from the factory programme have been estimated in Chapter 4 on the basis of the information supplied by the factory employees and other imposed assumptions. One of these was that 25 per cent of the factory jobs (and other employment pro rata) would have been in existence in the Eastern Borders in the absence of the Development Commission investment. This was a minimum estimate based on the replies of the factory managers who were interviewed. They indicated that about 30 per cent of the number of employees in their factories would continue to be employed in the absence of the Development Commission's activities. As not all of the managers were interviewed, this figure represented about 25 per cent of the estimated total numbers employed, and as such, this was used as a minimum estimate. However, it is possible that the rate of 30 per cent could, in fact, apply to all the factories. This continues to assume that no mobile companies would move into the area in the absence of Development Commission assistance.

There appears to have been a change in the pattern of employment in the factories which have been occupied in the Eastern Borders more recently (the evidence is discussed in Chapter 11) which suggests that a much higher proportion of employment would have been available in the area alternatively than was the case in the first part of this study. This indicated that about 40 per cent of all the employment in factories initiating production recently would have been available anyway, and that if only the tenants actually allocated factories over this period are included, this figure rises to about 65 per cent. These figures have important implications for the estimates which have been made of the numbers alternatively unemployed or outside the Eastern Borders. The estimates of the alternative positions made in Chapter 4 were re-worked on the basis of these figures and the implications for the final estimates investigated. The results are shown in Table 8.2.

TABLE 8.2 - Estimates of Numbers Alternatively Unemployed and Population Change under Different Assumptions about Employment in the Absence of Development Commission Factories.

Proportion of jobs available anyway	Alternatively registered unemployed		Alternatively unregistered unemployed		Population Increase
	Male	Female	Male	Female	
25% (main estimate)	102	61	10	143	1013
30%	92	61	10	133	944
40%	82	51	10	113	821
65%	46	27	5	61	493

This indicates that the results of this analysis are very sensitive to changes in the assumptions about the extent to which the employment which is currently available in the Development Commission factories would have continued to be available in their absence. It is largely the movement of employers into the Eastern Borders and the establishment of new companies which led to the initial estimate of 25 per cent. If the reduction in these sources of employment is a long term feature in the provision of employment in rural areas and factories are to a much greater extent occupied by companies already in existence, then the application of these initial results either to future employment in the Eastern Borders or elsewhere, should be undertaken with this qualification.

Ranges of Confidence

Clearly, the difference between the actual relationships occurring in the Eastern Borders and the estimates made here is not known. Any consistent bias affecting the final results in an upwards or downwards direction would combine to produce distorted estimates of the values being sought. A broad confidence range can be suggested by consistently varying the individual parameters in a

direction to increase or decrease the final estimates. This was undertaken and various changes were made simultaneously in all the parameters which have been determined exogenously to the model and which are not based on direct evidence. Thus variations between plus and minus ten per cent were made in the local value added of local incomes other than factory incomes, the coefficients of the multiplier, in the surplus capacity in the local services and industrial services sectors, in the rate of increase of employment in public administration, in the family size and finally in the probability that individuals would alternatively have been unemployed in the Eastern Borders or would not have been living there. The results of those variations are shown in Table 8.3.

TABLE 8.3 - Sensitivity of Analysis to Variations in all Parameters.

Changes in Parameters	Total Employment		Alternatively unemployed in Eastern Borders		Population Increase	% Change in Population Increase from Central Assumptions
	Male	Female	Male	Female		
Central Assumptions	510	512	112	204	1013	0
+ 10%	549	549	132	227	1317	+30.0
+ 5%	528	529	122	215	1155	+14.0
+ 2%	517	518	115	208	1067	+ 5.3
+ 1%	513	515	114	206	1039	+ 2.6
- 1%	506	508	110	202	984	- 2.9
- 2%	502	504	108	200	957	- 5.5
- 5%	491	494	103	194	881	-13.0
- 10%	475	479	96	186	766	-24.4

The Impact of Factory Linkages

It is also possible to make some observations as to the relative contributions which different types of company can make to local employment. Companies may influence other local industry either through backward linkages (i.e. the purchases of inputs from local companies) or forward linkages (i.e. the sale of inputs to local companies). In the case of the latter, companies operating in the Development Commission factories appear to sell the bulk of their output outside the Eastern Borders; eight of the ten companies interviewed marketed less than five per cent of their output locally.

It was estimated that the existing companies in Development Commission factories led to a further 54 jobs in providing products and services for them. This figure derives from the information collected from the companies on their pattern of local purchases. The two most significant elements in this were expenditures on local hauliers and on other services. This latter category included such services as the use of local builders, electricians, and hotels.

An analysis was made of the contribution to local incomes resulting from the purchases of the seven companies for thich full information was available. This figure (excluding expenditure on rates) was then divided by the number employed by each company and it was found that it varied substantially, ranging from below £50 per employee to over £500. The estimate made for all the factories equalled £215 to local incomes per factory employee. The figures for the individual companies appear not to be related to their size, but rather to the type of work which they undertook. Those companies undertaking the manufacture of small items for sale outside the Eastern Borders, appeared to have least impact locally. On the whole those companies either using local raw materials (even though locally produced primary products have been excluded from total expenditure; see Chapter 5) or providing a local service, tended to lead to higher incomes. However, the company making the highest contribution to

local incomes sold practically none of its output in the Eastern Borders and did not use local raw materials or services. Its high contribution derived from a large expenditure on local haulage.

The potential for local employment of selecting companies making high contributions to local incomes is shown in Table 8.4.

TABLE 8.4 - Impact of Different Levels of Local Purchases.

	Local Incomes per Employee	Total Employment	Alternatively Unemployed	Population Retained
Central Estimate	215	1022	316	1013
Purchases + 10%	237	1028	319	1019
Purchases + 50%	323	1057	329	1048
Purchases +100%	430	1093	339	1083

The policy implications of these figures are perhaps more complex than may appear at first sight. Firstly, the number of companies for which data are available is very small and for some of these, their establishment in the Eastern Borders is recent and they may not yet have established links with other companies in the area. Furthermore, it is important to consider the position which would occur in the absence of the policy initiative. It seems likely that on the whole, companies with the greater local linkages would be more likely to have been established in the area anyway, while those with fewer links would be unlikely to have established in the area at all. Thus the proper comparison would be between the extra jobs in the area as a result of the policy, rather than the total jobs associated with each factory.

Finally, a more comprehensive analysis could be achieved through the construction of an input/output model of the area. This has not been possible in this context, but might represent a fruitful avenue of research, if a model with widely applicable results could be established.

Exchequer Costs in the Eastern Borders

This variation in assumptions also has implications for the estimates which have been made of the cost to the Exchequer of creating employment and retaining population in the Eastern Borders. Four different estimates of cost are of interest: cost per factory job, cost per total job, cost per person retained and cost per person who would alternatively have been unemployed in the Eastern Borders. It is this final figure which may best be regarded as the cost of 'creating employment' in the Eastern Borders.

Two measures of total cost were used in Chapter 7, firstly, a low estimate, comprising the cost of constructing the factories, acquiring land and developing the sites and secondly a high estimate encompassing the total cost including the disbursement of regional grants and other payments under general regional policy. The likely range of these costs can be presented on the basis of the results of the earlier sensitivity analysis. This suggested likely ranges as indicated in Table 8.5.

TABLE 8.5 - Impact of Variations of All Parameters on Various Measures of the Policy.

numbers

	Variations in all Parameters:				
	-5%	-2%	Central Estimate	+2%	+5%
Factory Jobs	788	788	788	788	788
Total Jobs Associated with Factories	985	1006	1022	1035	1057
Population Increase	881	957	1013	1067	1155
Numbers Alternatively Unemployed	297	308	316	323	337

The estimates of the cost of the project to the Exchequer resulting from these ranges are shown in Table 8.6.

TABLE 8.6 - Variations in Estimates of Exchequer Cost with Systematic Adjustments to Parameters.

£ at 1976 prices

Costs of Factory Construction	-5%	-2%	Central Estimate	+2%	+5%
per factory job	2758	2758	2758	2758	2758
per total job	2208	2162	2129	2102	2059
per extra person in the Eastern Borders	2470	2272	2148	2038	1884
per person alternatively unemployed	7305	7041	6863	6707	6471
Total Exchequer Cost					
per factory job	3529	3529	3529	3529	3529
per total job	2825	2766	2724	2689	2634
per extra person in the Eastern Borders	3160	2907	2749	2608	2410
per person alternatively unemployed	9347	9009	8782	8582	8280

These figures suggest a range of measures of the gross cost to the Exchequer of the Development Commission factory programme. The variation in the estimates indicates the dangers of placing too much confidence on individual figures in this type of analysis. If the objective of the Development Commission is to create employment, then the best available measure of this is provided by the numbers estimated to have been unemployed in the Eastern Borders in the absence of the factory programme. This represents an underestimate to the extent that some of the potential emigrants or immigrants might have either been unemployed or caused others to be unemployed outside the area.

The sensitivity analysis has concentrated on the present position in the Eastern Borders. In terms of considering the future pattern of employment in the areas it is assumed that on the whole these jobs will be provided on a permanent basis for the foreseeable future. One exception to this is in the employment which has been attributed to the actual construction of the factories. This clearly cannot be expected to be retained in the future and so should be excluded in any projection of future patterns of employment.

CHAPTER 9

NET SOCIAL BENEFITS OF THE FACTORY PROGRAMME

In the previous chapter the effects of the factory programme have been evaluated in terms of their impact on the public Exchequer. This has included both the direct costs of establishing the factories as well as the less obvious, though important, savings in unemployment benefit and increases in exchequer revenue from taxation of the increased incomes generated through the factory programme. In this chapter a different form of evaluation is attempted which is broader in that it takes account of a wider range of benefits and costs arising from the factory programme and that it values the results of the programme in terms of social benefits and costs rather than market prices. The chapter begins with a brief review of the relevant concepts and then presents estimates of the main components of social costs - particularly the cost of labour and capital and the public and private services which are required as a result of the factory programme.

Net Social Benefits

The concept of net social benefits (NSB) has been spelt out in a recent study of the Treasury* (1976) which emphasises that, in the context of production in rural areas, it is possible to estimate social benefits by summing the differences between the market value of each factor of production and its social opportunity cost. We may thus write the annual identity :

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* In fact the terminology used in the Treasury studies is different from that in this report. The Treasury refers to 'resource costs' and 'resource effects'. These are precisely equivalent to 'social opportunity costs' and 'net social benefits' respectively in this report.

$$NSB = B-C = \sum_{j=1}^{n} Q_j (P_j - P^*_j) \qquad \text{.....(1)}$$

where j denotes the factor of production ($j=1,\ldots,n$)

B is social benefits

C is social costs

Q_j is quantity of factor j used

P_j is market price of factor j

P^*_j is social opportunity cost of factor j

This series of annual flows must then be converted to its present value (PV), by discounting at the social rate of discount. Giving the symbols above a subscript t, denoting the year in which they arise we may extend (1) as follows:

$$PV(NSB) = \sum_{t=0}^{T} (B_t - C_t)(1+r)^{-t} = \sum_{t=0}^{T} \sum_{j=1}^{n} Q_{tj}(P_{tj}-P^*_{tj}).(1+r)^{-t} \qquad \text{.....(2)}$$

where T is the time horizon ($t=0,1\ldots T$)

r is the social rate of discount.

However, there are other consequences of establishing factories additional to those which are reflected in factor markets, in particular the factory programme has generated a demand for local authority services which has already been referred to. In addition there will be other services demanded in the Eastern Borders which are privately provided and these too must be included as an item of social cost. Other aspects include movement costs associated with firms and workers and the costs of public administration. Thus we may write a more complete accounting identity as

$$PV(NSB) = \sum_{t=0}^{T} (B_t - C_t) = \sum_{t=0}^{T} \left[Q_{tj} (P_{tj} - P^*_{tj}) - K_t \right] . (1+r)^{-t} \qquad \text{.....(3)}$$

where the variables are defined as in (1) and K_t is cost of extra services needed in year t.

It is possible that social opportunity costs will be greater or smaller than market prices. For example in a slack labour market wages paid are likely to exceed the social opportunity cost of labour. Alternatively, in the context of capital, the opportunity cost may well exceed market cost. In the event it was found that these relationships exist in the Eastern Borders, with the result that the first term on the right hand side of (3), relating to labour, has a positive sign whilst that relating to capital has a negative sign. This result is to be expected because bringing unemployed workers into employment confers benefits, whilst subsidizing capital investment imposes costs on society. The purpose of these calculations is to assess the balance between costs and benefits.

Two further methodological points should be emphasized. First, as with the rest of this study, the approach has been incremental: that is the effect of the factories on the local economy is assessed as the difference between having them and not having them. We thus estimate the level of local employment, capital investment and service provision 'with' and 'without' the factories and compare the two in order to establish the net effect of factories. Secondly, it is necessary to define social opportunity cost carefully as the precision with which these costs can be measured directly affects the accuracy of the estimation of net social benefits.

In the next two sections we discuss the methodology to be used in estimating the social opportunity cost of resources of labour and capital used in the factory programme. In the following section we examine the external consequences of the factory programme particularly in the context of service provision and in the concluding sections of the chapter we then draw these estimates together in discounting the annual flows of social benefits and costs of the factory programme over various time periods.

The Social Opportunity Cost of Labour in the Eastern Borders

By definition the social opportunity cost of labour is the total loss of production from the economic system as a result of the use of labour in a particular way. For purposes of appraising public policies it is desirable to use the long-run measure of this cost ignoring the more immediate problems of disequilibrium. Two studies in this country have tried to measure the social opportunity cost of rural labour; the first of these (HM Treasury (1972)) estimated the social opportunity cost of labour in forestry and the second (HM Treasury (1976)) attempted a more general measure relating to the use of labour in industrial employment. Both of these studies were based on the data available and the models fashionable in the early 1970s. Since then a major change in the level of unemployment has effectively altered the direction of many of the arguments used in those calculations. Accordingly it has been decided to start from scratch and to re-calculate the social opportunity cost of labour for the purpose of this study applying the methodology used in the earlier work where appropriate.

The aim is to estimate what the workers currently employed in the Development Commission factories would have produced had those factories not been in existence. Before proceeding to this central question we must clear up one methodological point which arises from the first of the two Treasury studies cited above. In that study (HM Treasury (1972)) a detailed method of estimating the resource cost of labour is set out in an Appendix. The procedure starts from the previous employment situation of workers and develops an estimate of the 'first round' effect of their employment on incomes in the region. A multiplier is then applied to this total and further effects both inside and out of the region are then estimated. This procedure is not followed here because multiplier effects of the Development Commission factories on the region are already taken into account in estimating total employment they generate. Furthermore, in the generally high unemployment situation currently prevailing it seems inappropriate to make assumptions about the

inter-regional inflationary effects of delayed migration and employment creation, as was done in the forestry study. The methodology followed here is more closely akin to that of the second Treasury study which confined itself to the direct production losses as a result of creating employment.

Production losses are most conveniently measured, in contexts such as this, from gross income, using the assumption that workers are paid their gross product at the margin. This assumption may seem unduly restrictive in depressed regions, characterized by disequilibrium in labour markets. However, the assumption that the rational employer will not pay a worker more than his marginal value product in the long term, allows direct inferences of production losses from labour cost data. Alternative approaches to measurement would be both difficult and time consuming and are therefore rejected.

The effect on the gross income situation of various categories of worker in the Development Commission factories as a result of the programme may be tabulated as follows :

Assumed Employees Income Situation 'With' and 'Without' the Factory Programme

	'With'	'Without'	
		In EBDA	Outside EBDA
Registered unemployed	Market Wage	Unemployment Benefit	-
Unregistered unemployed	Market Wage	No wage	-
Concealed unemployed	Market Wage	Low wage employment	-
Deferred emigrants	Market Wage	-	Similar Wage
Induced immigrants	Market Wage	-	Similar Wage

This tabulation underlines the variables that have to be measured and also points to a particular problem of how to handle transfers in this context. The main transfer under consideration is, of course, unemployment benefit and the issue is whether this should

be set against the social opportunity cost of labour. Theoretical arguments would suggest that it should be ignored as being simply a transfer. However, against this, it should be noted that in moving out of unemployment and into work the worker would at least be losing some leisure and such losses are not necessarily trivial. Alternatively it may be argued that there would also be some utility in being at work rather than being unemployed. These two offsetting arguments are indeterminate and it is perhaps easiest to assume that they offset each other precisely and can thus be ignored.

The situation is more clear-cut for most other categories of worker and the problem in that context is merely one of estimating the differentials between workers 'with' and 'without' the factories. These inferences will be broadly made from the data previously presented from the survey of workers in factories.

In Chapter 4 (Table 4.14) the alternative situation of factory employees is estimated from the survey of workers. These data have been re-assembled in Table 9.1, eliminating the proportion for whom it was estimated that employment would have been available in the absence of factories, so that they now show the proportion of workers who would have been in various situations had it not been for the factory programme.

TABLE 9.1 – Estimated Alternative Situation of Employees 'Without' the Factories.

	Male	Female
	per cent	
Registered unemployed	26.7	16.7
Unregistered unemployed	3.9	39.3
Concealed unemployed	3.9	9.7
Deferred emigrants	37.4	19.3
Induced immigrants	28.1	15.0
	100.0	100.0

The main difference between the two columns in Table 9.1 lies in the relative greater importance of unregistered unemployment of women and the greater importance of deferred emigrants and induced immigrants in the case of men. The next stage is to obtain the relevant production differentials for the different categories of worker from gross income data. These are presented for full-time men and women in Table 9.2. They are obtained from the survey of employees augmented where necessary from other sources. The first few rows of the table present the components of the gross cost of labour in the factories. These relate to the 'with' situation referred to earlier in this section. The next problem is to estimate the reduction in earnings that employees would suffer if they were obliged to take up alternative employment situations in the absence of the factory programme. These are estimated from the available data as follows. Those who would have been registered as unemployed would obtain unemployment benefit which is ignored because it is a transfer; in addition, it is assumed, they would also have some minimal level of production perhaps from their allotments or gardens or some profitable activity, accordingly it is assumed that their gross income is reduced by £2,500 p.a., leaving them with only a few hundred pounds. The unregistered unemployed have a similar reduction in value product. The concealed unemployed are a difficult group to estimate in the sense that we do not know precisely which occupations this category includes. By definition the concealed unemployed are being paid more than the value of output they produce, however this does not identify any particular group of workers for us. A guide to the level of underemployment in the absence of the factories might be inferred from the premium in wages obtained by workers who thought that they would alternately have had to stay in their old job. In the case of men this is somewhat greater than £4 per week. Further, it may be argued that this is a lower limit to the differential due to concealed unemployment and raised on the grounds that there will be a spread of premia obtained and those obtaining the biggest premia are assumed to have come from the higher levels of concealed unemployment. On the basis of such arguments the assumed differential of £500 p.a. has been used. Those who would have migrated from the Eastern Borders

TABLE 9.2 - Estimated Annual Gross Salary Differentials Between Various Categories of Worker.

	Full-time Males	Full-time Females
	£	£
Net Salary	2180.91	1866.57
Estimated tax	549.56	644.13
Employees N.I. contribution	157.00	144.20
Employers N.I. contribution	252.65	219.43
Gross salary	3140.12	2871.43
Unemployment benefit	1016.51	549.81
Estimated difference in gross income, before tax, in alternative of:		
- registered unemployment	2500.00	2400.00
- unregistered unemployment	2500.00	2400.00
- concealed unemployment	500.00	400.00
- migrating from Eastern Borders	300.00	100.00
- not migrating into Eastern Borders	500.00	0

had the factories not been built, obtain a weekly wage premium of £4.51 on moving to factory employment. Since they chose to work in the factories rather than migrating it may be assumed that this is an upper limit to the perceived incentive to migrate in the existence of factories. We may take it that the cost of migrating would also feature in this position hence this premium overstates the average incentive to migrate. On balance it seems appropriate to add a small amount to this premium to allow for the costs of moving and hence to assume that in the absence of the factories these workers would have produced £300 less worth of output if they had migrated from the Eastern Borders. Similarly those who did migrate into the Eastern Borders obtained an increase in net weekly salary of £3.33. Allowing for tax and employers and employees national insurance contributions this becomes some £5 per week equivalent to £250 p.a.. As with the previous category it might be argued that this is a low estimate

because the particular workers of concern here are the key workers who were brought in by the factory programme, or other workers being available either from inside or from outside the Eastern Borders. Accordingly this estimate has been raised to £500 per annum. Similar considerations led to the estimated reductions in gross income for full-time females and these are noted in Table 9.2.

It is now possible to estimate the social opportunity cost of labour following the scheme laid out at the beginning of this section. The gross earnings of one hundred workers is taken as being one hundred times the gross salary shown in Table 9.2: for men this comes to £314,012. The amounts to be offset against this in order to arrive at opportunity costs are then obtained by multiplying the reductions in gross income under alternative employment situations by the appropriate weights in Table 9.1 which are the estimated percentage of workers in those various situations in the absence of the factory programme. The result of this calculation is set out in Table 9.3, where it can be seen that the social opportunity cost of full-time males is roughly 67 per cent of the market costs whereas that of females is 51 per cent. This difference is accounted for mainly by the greater importance of unregistered unemployed females in moving to the factory situation.

TABLE 9.3 - Calculated Social Opportunity Cost of Labour.

	Full-time	
	Males	Female
	£	£
Gross Annual Income, 100 workers	314012	287143
Losses in output without factories attributable to:		
- registered unemployment	66750	40080
- unregistered unemployment	9750	94320
- concealed unemployment	1950	3880
- migration from Eastern Borders	11220	1930
- non-migration into Eastern Borders	14050	0
	103720	140210
Social Opportunity Cost, 100 workers	210292	146933
Social Opportunity as per cent of market cost	67.0	51.2

The estimates relate to a particular set of decisions taken and the conditions prevailing during the 1970s and must now be converted to the long-run social opportunity cost of labour. The Treasury study (1976), after carrying out similar though less detailed calculations, adjusted them upwards to take account of the fact that in the longer run as employment creating policies proceed it would be reasonable to expect a reduction in the rate of structural unemployment and hence an increase in the opportunity cost of labour. The appropriateness of such a procedure in the present context is less obvious. First, since the level of structural unemployment in the economy is now so high it may be doubted whether it will fall very much in the next ten years and possibly even for longer; it is emphasized that this assumption relates to Eastern Borders not necessarily to the economy as a whole. Secondly, it must be recognised that the traditional industries in the area are probably still running down their labour forces and therefore there will be a continued, though possibly slow, increase in the number of people becoming unemployed for structural reasons. The factory programme has nearly ceased to create further jobs and it has been assumed that the number of jobs in factories already occupied will increase to 1982.

On these assumptions, we might justify a small upward adjustment in the social opportunity cost of labour towards the market wage but not to the extent which was assumed in the Treasury study. Accordingly it is suggested that the final estimates of social opportunity cost of labour should be 70 per cent of the market wage in the case of full-time males and 55 per cent in the case of full-time females.

These central estimates derive from the wages ruling in the mid-1970s and from the survey of workers which reflects the moves made over a number of years, up to 1977. The resulting estimated social opportunity costs thus relate most closely to the mid-1970s and the question remains as to whether there will have been any systematic change in these costs as the factory programme developed. It could thus be argued that the factory programme has 'tightened'

the labour market in the Eastern Borders, reducing the level of unemployment and raising the social opportunity cost of labour. However, during the same period the massive general increase in the level of unemployment will have had the opposite effect on the cost of labour. Ideally the social opportunity cost of labour should be calculated separately for each year, but sufficient data for such detailed calculations are not available. It is therefore assumed that the social opportunity cost was a constant percentage of the market wage, for both men and women, during the past period studied.

This leaves outstanding the question of whether the social opportunity cost of labour will rise in the next two or three decades. An optimistic view of labour market policies would indicate rising social opportunity costs. However the present levels of unemployment will take several years to return to more 'normal' levels, if indeed they ever return to normality of the kind experienced in the 1960s. There appears to be a measure of agreement amongst economists that the 'equilibrium' or 'frictional' rate of unemployment in the UK economy has risen and continues to rise as measures to improve conditions for the unemployed are introduced. The balance of these arguments is taken as grounds for assuming that the social opportunity cost of labour will not rise in the foreseeable future.

The Social Opportunity Cost of Capital Investment in the Eastern Borders

The Development Commission's special Investment Programme has encouraged the investment of capital in factories and machinery in the Eastern Borders. It is often argued (e.g. H.M. Treasury, 1976) that firms operating in the remoter rural areas will face lower rates of return on capital than would be the case in some alternative location, such as in the non-development areas. If this is the case, and if the factory programme has resulted in the establishment of

companies in the Eastern Borders, which would alternatively have been operating in a less disadvantaged area, then the loss of return on this capital must be included as a cost of the project. The assessment of this cost is therefore dependent upon (a) the alternative use of the capital involved and (b) its productivity in this alternative use.

Capital Investment in the Absence of the Factory Programme

Before the relative productivity of capital in its alternative use can be assessed, it is necessary to consider what this alternative use is. The range of alternatives here will be largely determined by the context within which the assessment of the factory programme is being undertaken. The basis of the analysis here is a comparison between the existing situation and that which would have occurred in the absence of the factory programme. It is assumed, however, that in this alternative position all the other government policies would continue to be in operation as before and that therefore the mobile companies could have sought regional grants and advance factories in alternative locations. It is also assumed that the effects of the policy in the Eastern Borders have not led to the government making any macro-economic adjustments. This partial analysis of the impact of events in the Eastern Borders has been adopted due to the extremely small scale of the project in national terms. This would not be an acceptable approach to the evaluation of a larger scale policy such as National regional policy (e.g. Rhodes and Moore, 1973). The total expenditure of the Development Commission in 1974-75 was, however, equivalent to only about one per cent of total government expenditure on regional support and regeneration and the expenditure in the Eastern Borders only about five per cent of Development Commission expenditure. The extremely small scale of the project in national terms has led to this approach being adopted.

The alternative uses of the capital may then be identified on the basis of the alternative positions as suggested by the factory managers. In the absence of the Development Commission assistance, the companies occupying advance factories could have been either operating in an alternative location, operating in the Eastern Borders at a smaller scale or not be in existence at all. In the case of the first alternative, the opportunity cost of capital is equivalent to the difference, if any, between the return on capital in the Eastern Borders and its return elsewhere. In the case of the second, the part of capital which would have been devoted to production in the Eastern Borders anyway has not been affected by the policy and the extra investment in the Eastern Borders, part of which has derived from government and part of which from the private capital market, would presumably have been earning some return elsewhere. The companies newly established in response to the Development Commission are in the same position as the extra capital investment in the companies which would have been established anyway.

Productivity of Capital in Alternative Uses

Very little empirical evidence is available on the relative productivities of capital in companies operating in different types of area. One report (Secretariat of the European Free Trade Association, 1971) has suggested that there is no evidence that the selection of sub-optimal locations is taking place and that firms are unlikely to move to locations where extra costs are expected to be incurred in the longer term. However, a cross-sectional production function analysis of firms operating in 'urban' and 'rural' areas in the United States (Nicholson, 1978) suggested that 'urban' production efficiency is approximately 12 per cent above 'rural', although this result may not be generally applicable. Industries were classified as 'rural' if within each state 25 per cent or less of their employment was within a Standard Metropolitan Statistical Area, so that the analysis was undertaken on a larger scale than would be directly applicable to the Eastern Borders. The results do suggest that industries adapt their capital intensity in response to differing wage levels in the area in which they operate.

The most likely regional disadvantage of the Eastern Borders is the increased transport costs which result from the area's distance both from supplies of raw materials and from markets. Some managers mentioned that they did experience higher transport costs than they had or would have done in an alternative location. This need not necessarily be the case for all companies. For instance those processing local raw materials may have to pay more to get their output to the market than would be the case elsewhere, but they presumably have to spend less on transporting raw materials. If the volumes of inputs and outputs are the same, these costs are likely to cancel out. The alternative situation was compared with the source of inputs and location of markets for each company. This is shown in Table 9.4.

TABLE 9.4 - Distribution of Companies by Origin of Inputs and Destination of Outputs.

Alternative situation	Number of companies	Number with local raw material	Number selling more than 50% of output locally
Elsewhere	4	0	0
Smaller scale locally	4	1	2
Not exist	4	3	0

This suggests that six out of the eight companies which were not attracted into the Eastern Borders by the Development Commission's policy do, in fact, have some reason for operating there, either because of local raw materials or local markets. The one which was operating in the area prior to moving into an advance factory must have chosen to establish in the Eastern Borders in the absence of any particular local financial assistance, and presumably therefore largely on the basis of market forces. This implies that in the view of the manager of this company, the benefits of operating in the area outweigh any potential costs.

It appears then, that only those companies moving into the area from outside the Eastern Borders and the one new company could have been encouraged to establish in the Eastern Borders as a result of the financial incentives offered by the Development Commission at lower productivity than would be the case elsewhere. As mentioned in Chapter 3, the single most important reason given for a move into the Eastern Borders was the availability of an advance factory and regional grants. If it is assumed that these managers have made rational decisions, it may be inferred that the extent of the regional disadvantage will not be greater than the extent of grant paid to attract them there. The most common alternative location chosen was somewhere else in a development area, so that it is the extra finance received in the Eastern Borders which has encouraged the move. This may be assessed as the net expenditure made by the Development Commission in respect of these particular companies. This represents a maximum measure of the regional disadvantage. There may, however, be no regional disadvantage, so that the grants paid to these companies will lead directly to higher profits. A number of advantages other than financial incentives or local supplies or markets were mentioned by the company managers. As indicated above, one of these was the quality of the environment; others included the availability of local labour and the availability of space for bulky products and lack of congestion interfering with the receipt of supplies and dispatch of output and the lack of unionisation and greater conscientiousness of the labour force. If these advantages compensate for the higher transport costs, then there will be no loss of productivity associated with capital investment in the Eastern Borders. A direct measure of this could only result from a detailed analysis of the costs of similar firms operating in different areas.

The foregoing analysis suggests that the maximum reduction in productivity associated with the factory programme may be inferred from the net contribution made to the companies moving into the area and the one establishing locally without local supplies or market, by the Development Commission. This contribution is assessed by bringing the total expenditure (factory construction, land purchase, site

development and housing guarantees) to an annual sum of £X at a 10 per cent discount rate over a period of 30 years. In reutrn the company pays £R per annum rent for the factory (taking rent free periods into account). The loss of productivity is then given by £X-R per annum. This was assessed on the basis of the position when the tenant took occupation of his factory, as it was at this point that a decision was made about the advantages and disadvantages of establishing in the Eastern Borders. Therefore, the cost of construction and rents paid on factory extensions, where these were agreed to at the time of the initial occupation, were also included regardless of subsequent charges. This provided a stream of costs which suggest a maximum measure of the loss of capital productivity associated with the factory programme.

Service Provision in the Eastern Borders

The provision of Development Commission assistance for industrial development in the Eastern Borders has encouraged some people to move into the area who would otherwise not have done so and others to remain in the area, when they would otherwise have emigrated. It appears to be likely that the unit cost of providing public services to the population which would alternatively have been outside the Eastern Borders will be greater in the area than it would have been outside. This cost differential is presumed to result from the fact that in the remoter areas, services need to be provided to a more dispersed population and that this group of people would, alternatively, have resided in a relatively more urban area, where unit costs would be lower.

As a result of this, an attempt has been made to assess the cost which has resulted from the larger population in the Eastern Borders, in terms of the resources which are devoted to service provision, but which could have alternative uses. The assessment has been undertaken in two parts: the provision of local authority services and the provision of other public services. Before that, the need for assessing the impact on privately produced services is briefly discussed.

Privately Produced Services

Where services are provided by private organisations, such as shops, public houses and taxis, the charge which is levied will be set at such a level as to cover the costs of providing the service. Alternatively, the service will not be supplied. This means that the resources which are devoted to this sector will be likely to be moved to other sectors in the longer term if the return is lower than that which could be achieved elsewhere. This suggests that there is no cost associated with the retention of population in the Eastern Borders in respect of this sector. The willingness of people to continue to live in the area and to pay higher prices for private services indicates that other benefits outweigh the costs.

Local Authority Services : A Theoretical Analysis

It is assumed here that the significant difference between the Eastern Borders and the alternative area of residence is that of population density. The position of these two areas is compared: the Eastern Borders and that in the 'average' area which is the assumed alternative location of the migrants in the basence of Government support policies. The concern is with the level and cost of the provision to that part of the population alternatively not in the area, rather than to the population as a whole.

The incidence of cost derives from the fact that a given level of services is provided at greater cost than would be the case in the 'average' area. Thus resources are devoted to service provision in rural areas which could have alternative uses elsewhere in the economy, if the Development Commission policy had not been prusued. The position is illustrated in Figure 9.1 which applies to the costs and benefits of providing one particular service to this group in the Eastern Borders and in an average area.

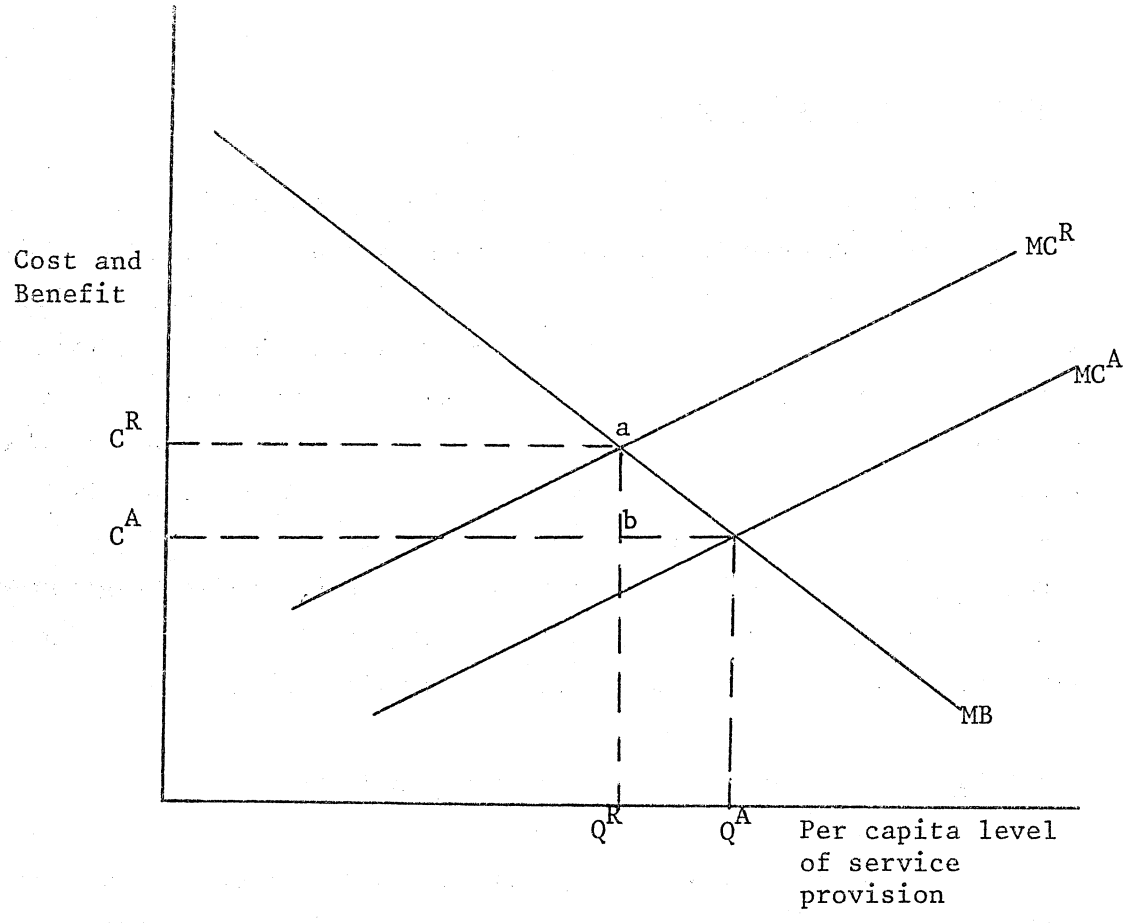

FIGURE 9.1 - Optimal Per Capita Service Provision in Urban and Rural Areas

In Figure 9.1, MB represents the marginal benefit from the provision of this service and MC^R and MC^A represent the marginal cost of its provision in an area of low population density and average population density respectively. This analysis implies an optimal level of service provision of Q^R in the remote area and Q^A in the 'average' area.

However, the levels of service are not solely determined on the basis of local conditions due to the fact that for many local authority services Government lays down certain minimum standards which are to be met. If it is assumed that this level of service is that which would be provided by the 'average' local authority, then the position becomes that illustrated in Figure 9.2.

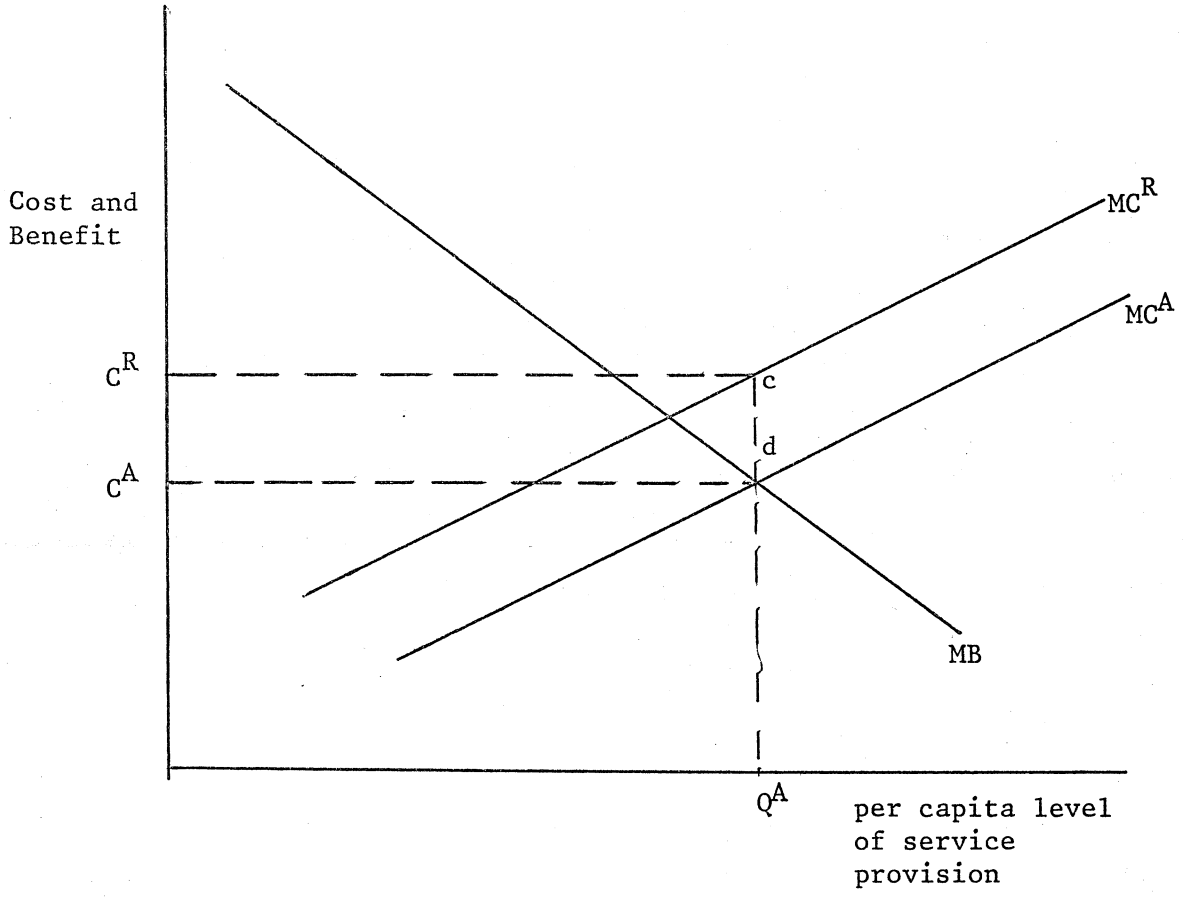

FIGURE 9.2 - Optimal Services with Fixed Standards of Provision

This position implies that the level of service provision now undertaken by the local authority in the remote area is above that for which local residents would be willing to pay. Minimum standards are applied to some degree in such areas as education and planning, although local authorities also have discretion to provide higher levels.

This is not an unlikely state of affairs in that central Government grants represent over 60 per cent of overall local authority expenditure (Jackman and Sellars, 1977).

The extra cost which arises from a retention of population in remoter areas can therefore be defined if different levels of service are provided.

If E_j^R = Expenditure on service j, in a remote area, to the retained population.

E_j^A = Expenditure on service j, in an average area, to the same group had they migrated.

Q_j^R = Quantity of service j provided per capita in a remote area.

Q_j^A = Quantity of service j provided per capita in an 'average' area.

Then the cost of retaining the population in the year t is

$$K_{tj} = E_{tj}^R - \left(Q_{tj}^R \times \frac{E_{tj}^A}{Q_{tj}^A}\right)$$

Thus the cost in one year equals the expenditure on service provision in the remote area less the numbers of units provided in the remote area multiplied by the average cost per unit in the average area. This is equivalent to area $C^R.a.b.C^A$ in Figure 9.1. If the level of service provision is fixed at Q^A, then the position simplifies to :

$$K_{tj} = E_{tj}^R - E_{tj}^A$$

or area C_A d.c.C^R in Figure 9.2.

The total cost of retaining this population in the remote areas is therefore

$$K = \sum_{t=0}^{T} \sum_{j=1}^{m} \left[E_{tj}^R - \left(Q_{tj}^R \times \frac{E_{tj}^R}{Q_{tj}^A}\right)\right] . (1 + r)^{-t}$$

where r = social rate of discount

T = time horizon (t = 0, 1....T)

m = number of services provided (j = 1.....m)

If the level of service provision is fixed at Q^A, this becomes

$$K = \sum_{t=0}^{T} \sum_{j=1}^{m} \left[(E_{tj}^R - E_{tj}^A)\right] . (1 + r)^{-t}$$

Patterns of Local Authority Expenditure

While local authorities do have statutory duties to provide certain basic levels of service, they also have discretion to provide more of these, as well as other services. Layfield (1976) concluded that the services over which local authorities have no effective discretion represent only a small proportion of their total expenditure.

Perhaps the greatest problems in analysing local authority service provision arises from the lack of a measure of output. Most of the services provided do not result in an output which can be measured in a meaningful way, particularly in the case of social services, fire protection and planning control. Most measures used are based on inputs, such as counselling given or fires controlled rather than the contribution which the service has made to social conditions or the value of property saved from fire. This means that a simple comparison of costs can not be used for estimating the effects of population movements, and any estimates must derive from information on local authority expenditure on service provision.

Variations in local authority per capita expenditure derive from a number of sources (Le Grand, 1975):

(a) from variations in the levels of unit costs

  (i) as a result of differing input prices

  (ii) from differences in local authority production functions

  (iii) from achieving different levels of efficiency.

(b) from variations in the levels of service provided per capita.

The variation being sought is that which derives from the influence of the remoteness of the areas in question and this is likely to be associated with the low population density and possibly with the fewer economies of scale which are likely to be exploited by the smaller settlement sizes in these areas.

Local Authority Expenditure Functions

The foregoing analysis suggests an approach to the definition of the costs to local authorities of retaining population in the Eastern Borders. If an expenditure function could be estimated which satisfactorily explained the pattern of local authority expenditure, then the impact of a change in population density could be examined. An expenditure function would have the form :

$$E = f(D ; X_1, X_2 \ldots X_n)$$

where E is Local Authority Expenditure
D is Population Density

and X_i are Other factors influencing expenditure.

The other factors influencing local authority expenditure would be those influencing both the demand and the supply position; for instance, demand will be influenced by local incomes and tastes, and supply by local costs. This function would be estimated as :

$$E = \alpha + \beta_1 D + \beta_2 X_1 + \beta_3 X_2 + \beta_4 X_n + u$$

This enables the expenditure of a local authority to be predicted where the population density is varied and all other influences are held constant. Therefore, if the cost differential being sought is the impact on expenditure of the difference in population density in the Eastern Borders, as compared with the average population density, then this may be estimated as

$$\beta_1 \quad (D_{EB} - \bar{D})$$

where D_{EB} is population density of Eastern Borders Local Authority
$\bar{D}$ is mean population density.

An attempt was, therefore, made to estimate a local authority expenditure function for district and county councils in non-metropolitan England. Estimates of local authority expenditures, incomes and other characteristics (total population 1976, area and rateable value) are provided by the Chartered Institute of Public Finance and Accountancy (1978). The most recent set of statistics available applied to 1977/78. This set of information was assembled for all 39 counties and 296 districts. To this was added data for each district on total population in 1961 and 1971, size of various age groups in 1971, the size of the largest population centre in each area and the proportion of labour party representation on each county and district council. All the relevant variables were divided through by population.

Expenditure functions were estimated for non-metropolitan counties and districts. The relevant data which had been assembled at district level were aggregated for the estimation of the county expenditure function. Three functions which have been estimated at county and district level are given as an illustration in Tables 9.5 and 9.6.

The regression equations shown provide a reasonable explanation of the pattern of local authority expenditure. Some variations will be influenced by specific local conditions and needs. For example, individual personalities and local traditions may influence the pattern of expenditure in local authorities (Jackman, 1978). It is clearly not possible to explain this type of variation in an aggregate expenditure function.

TABLE 9.5 - Non-Metropolitan District Per Capita Expenditure

	Equations 1	2	3
District Population Density	0.13 (0.064)	0.17 (0.051)	0.14 (0.062)
District Rateable Value (£100's)	0.094 (1.57)	0.96 (1.57)	
District Population (1000's)		0.00083 (0.0011)	
Percentage of Population over 65	0.40 (0.14)	0.41 (0.14)	0.39 (0.14)
Percentage of Population under 15	0.050 (0.22)	0.047 (0.22)	0.049 (0.22)
Percentage of Population Change 1971-1976	-0.26 (0.10)	-0.27 (0.10)	-0.26 (0.097)
Population of largest town in district (1000's)	0.014 (0.013)		0.015 (0.013)
Proportion of Labour members on District Council	0.23 (0.025)	0.23 (0.025)	0.22 (0.025)
Constant	16.73	16.36	18.08
$\bar{R}^2$	0.43	0.42	0.43
N	291	291	291

Standard Errors in Brackets

TABLE 9.6 - Non-Metropolitan County Per Capita Expenditure

	Equations		
	1	2	3
County Population Density	1.84 (1.35)	2.69 (1.26)	0.58 (0.96)
County Rateable Value (£100's)	-11.81 (10.6)	-12.78 (9.66)	
County Population (1000's)		-0.14 (0.005)	
Percentage of Population over 65	-1.33 (0.50)	-1.53 (0.46)	-1.30 (0.49)
Percentage of Population under 15	1.44 (0.78)	1.08 (0.71)	1.74 (0.72)
Percentage population change 1971-1976	-1.29 (0.89)	-1.28 (0.81)	-1.76 (0.82)
Population of largest town in County (1000's)	-0.021 (0.021)		
Proportion of Labour members on County Council	0.17 (0.14)	0.14 (0.12)	0.16 (0.13)
Constant	194.69	213.13	175.48
R^{-2}	0.53	0.60	0.53
N	39	39	39

Standard Errors in Brackets

The individual variable with the highest significance is that indicating the proportion of labour party members on county and district councils. The coefficient of the population density variable is significant at the 99 per cent level throughout the district analysis, although this is not the case for the county analysis. However the sign is positive throughout. This indicates that per capita expenditure tends to be higher in local authorities with a higher population density. This result appears to contradict the original hypothesis that local authorities are required to spend more in sparsely populated areas. While it was also anticipated that in areas of high population local authorities would be obliged to make above average expenditures in order to maintain an acceptable environment, such as by providing parks and recreation facilities and regular collection and disposal of rubbish, it was hoped that this influence of population density would have been avoided through the exclusion of the metropolitan areas. This apparently is not the case. Perhaps the most fundamental problem in this type of analysis is the absence of a measure of the quantity of output. An attempt was made to allow for this by the inclusion of variables such as percentages of the population at particular ages. This has not been adequate in the aggregate approach taken here. Time has not permitted the disaggregated approach which appears to be required in order to identify the impact which population density has upon local authority costs.

Government Grants to Local Authorities

A second possible approach lies in an examination of the allocation of central government grants to local authorities. Government grants to local authorities have two prime objectives; firstly to compensate local authorities producing services under disadvantageous conditions, over which they have no control, and secondly, to reduce the general level of the burden of service provision in all local authorities.

If government grants were to achieve equity between local authorities for the provision of services for which they have a statutory responsibility i.e. to compensate those authorities fully for any excess over average unit costs which is beyond their control, then the difference between the lowest per capita government grant paid to a local authority and that paid to the Eastern Borders authorities would represent a financial measure of the extent of the disadvantage of these authorities. That component of this grant which was paid to authorities in order to compensate for low population densities would provide a measure of the cost identified earlier.

The 'needs' element of the Rate Support Grant, is the part of the central government grant to local authorities which takes their individual characteristics into account and provides payment for special demographic and physical characteristics. However, for reasons detailed elsewhere (see for instance, Moore and Rhodes, 1976; Jackman and Sellers, 1977), the actual grant paid in respect of these special characteristics does not compensate for the full cost of meeting these particular needs.

Since 1974/75, the 'needs' element has been calculated from a regression equation, which is estimated on the basis of previous expenditure patterns. Because of multicollinearity, resulting from close correlation between the explanatory variables, the coefficients of the individual variables do not reflect the full marginal cost of providing each type of service or under each condition. While this may be of less importance in determining the overall grant paid to local authorities, it does mean that the grants paid in respect of particular characteristics are somewhat arbitrary. This problem is closely related to that experienced above in the estimate made of the overall expenditure function.

'Standard Expenditure' Approach

Some commissioned work, undertaken for the Layfield Committee, by Moore and Rhodes (1976) has provided an alternative approach to the question of imputing a measure of the differential cost of providing local authority services to the population retained in the Eastern Borders. Their work concerns the assessment of the relative needs of individual local authorities and a suggested approach to the allocation of central government grants (The 'Standard Expenditure' Approach). This has the objective of compensating local authorities fully at the margin for only those variations in expenditure which they involuntarily need to incur as a result of their demographic and geographical structure varying from the national average. Clearly a low density population leading to above average costs of service provision represents a need for which a system of grants aimed at achieving equity between local authorities should compensate. The impact of sparsity is explicitly taken into account by Moore and Rhodes in their analysis, and their figure for the size of the grant which should be paid to local authorities in order to compensate for this represents the best estimate available of the cost of retaining population in the remoter areas, (which was identified earlier in this chapter).

Their purpose was to outline a new approach rather than to devise the 'perfect' formula in detail and a number of areas were identified where further research would be required in order to fully achieve the objective identified. Their analysis was undertaken in 1975 at a time when detailed statistics on local authority expenditures and costs were not available for 1974/75, the first year following local government re-organisation. They therefore determined their formula on the basis of 1967/68, a year for which they had full data available and then applied this formula to calculate the grant which would have been paid to each new local authority in 1974/75.

Methodologically, their procedure represents an acceptable measure of the cost of retaining populations in the remoter areas. However, their lack of data has resulted in the need to apply pre-reorganisation statistics to post-reorganisation authorities, which

is not entirely satisfactory. Furthermore, their analysis has not looked at district characteristics, which from the point of view of this study would have made their results of greater applicability. They also restricted their work to England and Wales, which means that no estimates are available for Scotland. Finally, their figure relates to the average cost per person in each area. What is being sought here is the marginal cost of a population increase. This could either be below or above the average figure depending upon the adjustments which are required in order to provide services for the larger population. A figure has been attributed, in the standard expenditure formula to take into account the cost of maintaining highways. This cost is higher in authorities which have a high mileage of road to maintain per capita, and so tends to be high in sparsely populated counties. However, because the cost of road maintenance is unlikely to be influenced by small changes in the population, this figure has been excluded from the estimate of the cost to local authorities of retaining population.

It is likely that within sparsely populated areas, the cost of providing services in different parts of the same area will vary. It was found in the survey of employees that about 67 per cent of them lived within two miles of the factory in which they worked. It may be presumed, therefore, that the population which has been retained in the Eastern Borders will be living within, or close to the towns in which the factories have been constructed, rather than in the less accessible parts of the area. This suggests that an estimate of the average cost of providing services to the entire population could to some extent be an overestimate of the marginal cost of providing services to this population. Nevertheless, the work of Moore and Rhodes appears to represent the only contribution made in this area and so it has been assumed that their results, estimated for the county of Northumberland as a whole, are applicable to the whole of the Eastern Borders area. Applying their provisional formula based on the standard expenditure method, they indicate a figure of £1.7m payable to Northumberland to take account of the

the sparsity of population in that area. The population of Northumberland in mid-1974 was estimated to be 286,200 and so the sparsity grant represents a payment of £5.94 per capita. This is equivalent to £8.60 if adjusted to 1976 prices on the basis of the Retail Price Index.

Non-Local Authority Services - Capital Costs

It may be argued that the retention of population in the Eastern Borders leads to a reduction in the expenditure required for the provision of infrastructure. Under conditions of depopulation, it is likely that the social capital available would exceed the demands made upon it. In contrast to this, the areas receiving immigrants from depopulating areas are likely to require the provision of new capital in order to support the population increase. Thus, influencing population to remain in remoter areas could reduce the overall demand for new social capital. However, while the overall population in the Eastern Borders has been declining, although there has been a net increase recently, there has been an intra-regional change in the location of the population. While there has been a steady decline in population in the rural areas, the populations in the settlements where the factories have been provided have been increasing since about the beginning of the decade. Thus any excess capacity available for population growth within the settlements is likely to have been taken up in the early stages of the factory programme, so that new facilities would be required for most of the factory employees and others retained in the area. This hypothesis is supported by the extensive house building which has been carried out in a number of settlements. If, therefore, it is assumed that the same infrastructure requirements would result regardless of whether population is or is not retained in the Eastern Borders, then the final consideration is whether these can be provided at equal cost in either location. The possibility of these facilities being provided at a larger scale outside the Eastern Borders suggests that they could be provided at a lower per capita cost.

For example, figures were provided of the capital cost of providing a primary sewage treatment works in Berwick upon Tweed and on Tyneside. The Berwick works was constructed to serve 16,000 people and the Tyneside works one million. The total estimated per capita cost at Berwick was about £113 (1974) and on Tyneside £90 (currently under construction). The Tyneside example is probably an extreme case of achieving economies of scale. Any such differences in the cost of providing social capital in and out of the Eastern Borders would represent an addition to the resource costs of the factory programme, but in the absence of any systematic evidence, no allowance has been made for this in the assessment of total cost.

Non-Local Authority Services - Current Costs

The non-local authority services which are provided in the Eastern Borders have been examined individually. The most important services are: Electricity, Gas, Postal Services, Telecommunications, Health Services, Water Supply, Sewerage and Broadcasting. While charges are levied for most of these, the actual rate of payment tends to be the same for all consumers. Thus, for instance, while the price of electricity is the same throughout an area the cost of providing it to some consumers will be higher than the cost of providing it to others in that area. This therefore implies a transfer from those consuming services in low cost areas to those consuming in high cost areas. The increase of population in what is likely to be a high cost area, will therefore raise the cost of providing the service, even though this extra cost will not be recouped in the form of higher prices, although overall charges may be raised.

The problem of estimating the extra cost of providing these services to a particular section of the population in the Eastern Borders, as compared to the cost of their provision to this same population in an alternative location, is a difficult one. Here, as before with local authority services, the correct measure is the

marginal cost. For many of these services, the average cost per consumer could be compared in an area of similar characteristics to the Eastern Borders and in a less remote area or with some national average. This, however, is unlikely to represent the actual differential resulting from alternative environments as the quantity or quality of the service provided may not be the same and as the expenditure required to provide the service may not vary in direct proportion to the population. It is also possible that a change in the size of population could lead to a change in the overall unit costs of providing a service to all the consumers. It has not proved possible to collect any information on this, although it is felt that it is probably unlikely to be of importance.

The information used in this section was derived primarily from two sources. Firstly, the organisations providing these services in the Eastern Borders were approached to find out whether they could provide information which would be of relevance to this study. On the whole this was not the case. In several cases their accounting procedures were not undertaken in such a way as to make any suitable financial information available and in others this information was confidential. In fact the full estimation of this cost could probably only result from a detailed study of such factors as the amount of time spent travelling in different types of area, and the resources have not been available to undertake this type of research. These organisations could however provide a general impression as to whether there was a significant cost difference or not. The second major source of information is that collected by the Treasury (HM Treasury, 1976) in connection with their study of rural depopulation. They examined in some detail two areas which overlap with the Eastern Borders; Roxburgh and rural Northumberland, and provide some specific estimates of the differences in costs in these areas and in Great Britain as a whole.

Electricity Supplies

Electricity is provided over most of the area, including parts in England, by the South of Scotland Electricity Board. There is a

standard tariff for electricity throughout the Board's area. Connection charges are levied on the basis of a standard capital contribution for domestic consumers but a charge may be made above this if the expected electricity demand does not exceed a given figure and where the actual connection costs are high. This allowance is exceeded quite often in the Borders, although this is also the case in the outskirts of Edinburgh where cables are put underground. It has been estimated that costs of supplying electricity in the Pennine Uplands are 30 per cent to 40 per cent higher than in other parts of the Yorkshire Electricity Board's area (Yorkshire and Humberside Economic Planning Board, 1976). In the Borders, it has been suggested that maintenance costs per consumer are about 80 per cent higher than is the case for the Edinburgh area, and that they are between 40 per cent and 60 per cent higher than other areas covered by the S.S.E.B. Information provided by the S.S.E.B. (1978) gives the expenditure on distribution, consumer service and meter reading and billing. These costs represent £23.85 for the year 1977/78 and £21.54 for 1976/77.

The cost of transmission is excluded as it is felt that this cost is unlikely to be directly influenced by small population changes. If costs in the Eastern Borders are on average about 60 per cent above those for the area as a whole, this suggests an extra cost of £13 per consumer in 1976/77. In the Treasury study a tentative figure of £25 per consumer per annum was suggested as representing the deficit in rural areas relative to the national average; this figure covers revenue and capital costs combined. A figure of £12 (1970-71 £) was provided for Roxburgh. The estimate made here appears to be in line with the others, taking into account the exclusion of transmission costs.

If it is assumed that all the households retained in the Eastern Borders consume electricity and that the average size of household is 2.4 persons, the net social cost of electricity provision per extra person now living in the area is £5.40 per annum.

Gas Supplies

In the Treasury (1976) report, some quite detailed estimates of the unit costs of providing gas supplies in various areas are given. The estimated deficit per consumer is provided for Rural Northumberland (£4.8) and Roxburgh (-£1.1). This suggests an average deficit for the Eastern Borders area of £3.7 or £7.6 in 1976 prices. Information available for the Scottish part of the area indicated that on average there are 3.47 people per domestic gas consumer. This gives a figure of £2.20 for the cost of supplying gas to the population retained in the Eastern Borders.

Postal Services

Neither the Post Office in England or in Scotland was able to provide any information concerning the relative cost of providing postal services in the Eastern Borders as cost records are not kept for specific areas or towns.

The most common concern about postal services in rural areas is with the role played by sub-post offices in rural areas (see for example, Standing Conference on Rural Community Councils, 1978). Also in the remoter areas it is claimed that it can cost up to 18p to deliver a letter (Countryside Review Committee, 1977). However, as the majority of factory employees live in or close to existing settlements in the Eastern Borders, these extremes are unlikely to be of importance here. In the Treasury report it is suggested that there is little difference on capital costs between urban and rural areas. On current account it is estimated that in 1971-72 the loss per head of rural population was about £2.40 more than the national average. Because of the fact that on the whole people retained in the Eastern Borders are not living in remote areas an arbitrary figure of one half of this will be taken to allow for the general remoteness of the area. This represents a figure of £2 per person per annum in 1976 prices.

Telecommunications

Neither of the post offices concerned with the area were able to provide estimates of costs of providing telephone services in the Eastern Borders. With respect to the Scottish part of the area it was indicated that costs are higher in the Borders than elsewhere, although it was not possible to place a figure on this. It was not possible to make direct comparisons between urban and rural exchange areas because of the different proportions of business telephones, which may have their own exchanges. In the case of Berwick upon Tweed, it was felt that the costs of providing and maintaining telephone services within the town are not significantly different from national costs. The Treasury report indicated that maintenance costs in Rural Northumberland and Roxburgh were about £1 per subscriber above the national average. This figure is equivalent to about £2 in 1976 prices. About 40 per cent of the total population retained are in England. On the assumption that this group does not incur this cost, the estimate of cost has been reduced to 60 per cent, i.e. £1.20 so that it may be applied to the total number of people retained by the factory programme. If 50 per cent of the households have telephones, this is slightly below the rate in England and in Scotland as a whole, but above that in the North of England, and the average household size is 2.4, then the cost per per person retained equals £0.25 per annum.

Health Service

The provision of health services in an area represents a wide range of different services provided from different centres. In the case of many of these, costs could be higher in a rural area than in an urban one. The two major causes of this are the extra travel costs which are likely to be incurred both by doctors and nurses travelling to patients as well as by patients travelling to centres for treatment, and the absence of economies of scale, which can be exploited with respect to specialist treatments and facilities in large hospitals.

The location of the factories in the larger settlements and the resulting distribution of the retained population means that the services which are already provided within each of these settlements, especially general practitioner services may be provided at little extra cost. In fact, the estimates of the annual current cost per head of providing family practitioner services in rural Northumberland and in Roxburgh were given by the Treasury as £10.0 and £9.9 respectively. This is compared with an average cost for Great Britain as a whole of £10.1. These slightly lower costs may derive from the lower cost of providing accommodation in rural areas.

However, for consultations and treatment requiring specialists and equipment located outside the area the increase of population in the Eastern Borders will raise the number of visits to the area which consultants need to make, or the number of visits outside the area which patients need to make to receive treatment. In a study of out-patient care in the Scottish Borders, Gower (1971) has compared alternative arrangements of out-patient clinics. She estimated the costs of consultants and patients travelling to out-patient clinics under various different distributions of clinics and travelling arrangements. In the existing arrangement, the total annual cost of travelling to out-patient clinics, including loss of labour, for consultants and patients was estimated at £24,400. Under another arrangement, including the replacement of an existing hospital with a new one, the total annual cost falls to £18,600. This still includes the cost of some patients requiring regional specialities to travel to Edinburgh. This suggests a potential saving of £5,800 through reorganisation within the area and may be taken as a minimum estimate of the increased cost resulting from the dispersal of population in the Borders. This analysis was concerned with an area, including the Scottish part of the Eastern Borders, with a population of 100,000. These costs relate to 1969 and so have been raised to 1976 prices by the Retail Price Index. This represents a per capita cost of £0.13. This figure is a bare minimum measure of the extra cost of providing medical services to the retained population as a number have not been considered. However, in the absence of any further data it has been added to the other costs without further adjustments.

Water Supply

Comparative costs of providing water in the Eastern Borders and other areas were not available. It was felt that the provision of supplies within Berwick is probably not much more expensive than elsewhere, although provision in rural parts of Northumberland would be more expensive. There is adequate capacity for a 5 per cent expansion of supplies in Berwick, although in Scotland, some capital works are required to increase the capacity of the existing systems. Following an examination of the data for England and Wales, the Treasury found no apparent relationship between total working expenses per thousand gallons consumed and population density. In the absence of any firm estimate of cost, no allowance has been included for any possible extra cost of providing water supplies to the retained population.

Sewerage

While sewage used to be discharged directly into the Tweed at Berwick, a sewage treatment works has recently been constructed. This is a primary treatment plant, involving no secondary biological treatment. Because of the availability of a large fast flowing river, close to the sea, a lower quality of effluent may be discharged, so that the costs of treatment are lower than would be the case at an inland site. Comparative operating costs were provided for the Berwick treatment works and a treatment works at Cramlington which serves a slightly larger population. These indicate that the per capita cost for the six months to September 1978 was £1.56, whereas in Cramlington the cost was £1.81. These costs are not strictly comparable as the Cramlington works includes secondary treatment. Any higher costs which could be associated with the maintenance of sewerage works in and around Berwick would tend to cancel this difference, and so no cost differential has been included in respect of the provision of sewerage facilities. The figures provided by the Treasury indicated that on the whole, costs in rural Northumberland were slightly below the national average and those in Roxburgh slightly above.

Broadcasting

The provision of radio and television services to populations in remoter parts of the country will be achieved at a higher per capita cost than elsewhere. It appears likely though, that a relatively small change in population size of an area such as the Eastern Borders would be unlikely to promote any change in the quality of service provided and therefore in the cost of its provision. For this reason, no cost has been included in the analysis in respect of broadcasting.

The Social Cost of Providing Services to the Retained Population

It is now possible to assemble the estimates made of the net social cost of providing the various types of services to the retained population in the Eastern Borders. The total cost comes to £18.6 per annum per person retained. It is based on some optimistic assumptions and a limited amount of data. As such it should be regarded as an indicator of the order of magnitude of the cost being sought.

TABLE 9.7 - Net Social Opportunity Cost of Service Provision

Type of Service	Estimate of cost per person per annum (£ 1976)
All local authority services	8.6
Electricity Supplies	5.4
Gas Supplies	2.2
Postal Services	2.0
Telecommunications	0.25
Health Services	0.13
Water Supply	-
Sewerage	-
Broadcasting	-
TOTAL COST	18.6

Movement Costs

The movement of labour and capital to the Eastern Borders has involved expenditure on moving individuals and companies to the area. Each of these represents a once and for all cost associated with the factory programme. There are two types of potential costs of factory movements, firstly the cost of physically transporting equipment from the old factory to the new, and secondly the settling-in costs resulting from the disruption of production and the need to establish new suppliers. As a result of the policy four companies have moved into the Eastern Borders. In the absence of the factory programme, it is likely that these companies would have moved to alternative locations rather than not have moved at all. Thus, as the policy is assumed to have re-directed moves rather than to have created them, no costs of movement have been included in this analysis.

The policy has also influenced the movement of people. It was estimated that as a result of the policy, 163 people have moved into the area. However, it is also estimated that 215 people have been discouraged from emigrating.

The net result has therefore been to prevent 52 movements from the Eastern Borders. It is not known how much each individual would have spent on each move, but if an approximate figure of £200 per move is taken, this suggests a saving of £10,400 up to this point. This is a once and for all figure and has been included in the calculations in proportion to the initial growth of factory employment.

Administrative Costs

Through the early stages of the project, developments in the Eastern Borders were encouraged locally by a development officer. The Development Commission made a grant so that this could take place. The administration in the areas is now organised separately for England and Scotland, and there are no officers devoted specifically to events in the Eastern Borders.

The encouragement of companies to move to advance factories in the area, the vetting of applicants, the organisation of factory construction and land acquisition has involved the use of resources which could have alternative uses. This has been the case, not only within the Eastern Borders, but also in Glasgow, Newcastle upon Tyne and London.

No measure is available of this cost, but as a minimum estimate, the Development Commission's grant to the Eastern Borders Development Association has been included as a cost of the project. This was in fact a 50 per cent contribution. The actual amount paid has been included up until 1974-75, after which the Eastern Borders Development Association was disbanded. However, as it is likely that the same amount of administration has been required, this amount has continued to be added while tenants were moving into the factories which are included in this assessment.

The Balance of Social Benefits and Costs

Having examined the social costs and benefits of the factory programme these may now be assembled in the form of annual cash flows and their net present value at the beginning of the programme can be calculated. It should be noted that the process of assembling these cash flows simply involves taking the earlier presented estimates of total factor income at market prices and at social opportunity costs, deducting one from the other, deducting also service costs, as in identity (3) at the beginning of this chapter, and setting out the information in tabular form.

At that stage two important analytical issues must be settled. First there is the question of the rate of discount to be used and secondly there is the related problem of the time horizon over which benefits and costs are to be measured. The general convention, in public sector project appraisal in the UK, is to use a test discount rate of ten per cent. However there are powerful arguments which appear from time to time for using a lower discount rate. This is

perhaps one of the least settled questions in public sector economics and it is therefore thought appropriate to test alternative discount rates on either side of ten per cent: accordingly the discounting has been carried out at rates of five, ten and fifteen per cent.

The question of time horizon is not independent of the discount rate because the use of a high discount rate reduces the impact of benefits or costs beyond a certain number of years quite dramatically. Thus the present value of £1 payable in thirty years time, discounted at ten per cent is approximately 6p but discounted at fifteen per cent it is worth only 1.5p. However discounted at five per cent £1 in thirty years time is now worth 23p. Thus we could say that using a discount rate of fifteen per cent is tantamount to setting a time horizon of twenty years.

Apart from the problem of interaction between the discount rate and time horizon, there is also substantial uncertainty as to the period over which benefits from the factory programme are of interest or relevance in project selection. One way of approaching this problem is to examine the expected useful working life of the main capital items involved, in this case the factories themselves. However it is very likely that the physical life of the factories might extend to half a century yet it is unlikely that benefits beyond thirty years will be significant, particularly if a ten per cent discount rate is used. Apart from the question of the durability of the factory structures there is much greater uncertainty as to the length of tenure of the factories' present occupants. It is quite possible that firms might stay for a short period in the factories and even those who stay for a longer period are unlikely to continue in operation with the present mixture of output and employment of factors in production. Accordingly the calculations become increasingly unreal as the time horizon over which benefits and costs are measured extends. An alternative approach to the time horizon can be made through policy objectives. The argument that policies to relieve structural unemployment in rural areas are designed to have an immediate impact on a problem of some present severity would

indicate use of a short horizon - perhaps even as short as ten years. This approach thus requires policy-makers to indicate their objectives before the policy can be evaluated. Given the uncertainty as to the intentions of policy-makers and the possible future development of the factory programme the benefits and costs of the factory programme have been discounted over different periods using different discount rates. Accordingly time horizons of ten, twenty-five and fifty years have been used and discount rates of five, ten and fifteen per cent have been applied to the cash flows.

The cash flows discounted are tabulated in full in Appendix 7. In the case of both costs and benefits alternative magnitudes have been estimated each year. The low estimate of cost (stream A) includes only costs associated with service provision, assuming that no capital costs are incurred apart from this. The high cost estimate (stream B) includes both service provision and capital costs. The high estimate of benefits (stream A) arises from the central estimate of the social opportunity cost of labour plus savings in moving costs as a result of the programme. The low estimate of benefits (stream B) was obtained by raising the social opportunity cost of both men and women by ten per cent of its central value and adding saved moving costs.

With the two cost and two benefit streams four separate net present values have been calculated for each discount rate and time horizon. Before presenting the results it should be pointed out that, on the cost side, stream B seems much more appropriate than stream A. On the benefit side the two streams might be taken as representing alternative views of the future development of the labour market with stream A being pessimistic with regard to the level of unemployment and stream B optimistic.

The results of the discounting procedure are presented in Table 9.8, where it can be seen that the present value of net social benefits is highly sensitive to the discount rate, the discount period and to the cash flow which is discounted. Thus

within the 10 year time horizon the present value ranges from £3m to less than £1m, depending on cash flow and discount rate. Similarly in the 25 year period the range is from £9m to just under £1.7m. In the 50 year discount period the range is, however, not much greater, lying between £14m and £2m.

TABLE 9.8 – Present Value of Net Social Benefits by Discount Period and Rate for Different Flows of Cost and Benefit.

Time Horizon (years)	Discount Rate (per cent)	Present value in £m for cash flows : AA	AB	BA	BB
10	5	2.286	1.870	1.671	1.255
10	10	1.625	1.328	1.151	0.853
10	15	1.185	0.967	0.809	0.591
25	5	8.973	7.404	7.746	6.176
25	10	4.679	3.856	3.923	3.100
25	15	2.679	2.204	2.165	1.689
50	5	13.470	11.120	12.120	9.771
50	10	5.584	4.603	4.792	3.812
50	15	2.891	2.379	2.366	1.854

NOTE : In labelling the cash flows costs are mentioned first and benefits second; thus flow BA represents cost stream B and benefit stream A.

Having estimated the Net Present Value of the factory programme under various assumptions, it is convenient at this stage to reduce the range of estimates. This may be done by eliminating the estimates incorporating cost stream A, which was included as a lower limit of cost. Similarly the upper and lower discount rates may be eliminated, leaving the estimates arising from 10 per cent, the Test Discount Rate. This pruning leaves results for two cash flows, three time horizons and one discount rate in use.

As with the evaluation based on Exchequer costs, presented in the previous chapter, the question now arises as to how these results may be standardized for comparative purposes. In Chapter 7 seven different denominators have been used in calculating cost-effectiveness. Here the same denominators have been used to calculate the social cost-effectiveness measures in Table 9.9. The purpose is standardization, to allow comparison with other estimates of progress towards possible single objectives, as was the case in Table 7.2.

In fact there is only one study which invites direct comparison with these results, because it has been based on light industry, and that is the Treasury (1976) study. Important differences between the Treasury study and this one are that the Treasury calculations relate to the prices ruling in the early 1970s compared with 1976 here; the results here embody a lower social opportunity cost of labour than the earlier study, which uses social opportunity costs between 75 and 85 per cent of market wages. This study also includes more costs than the Treasury study, particularly those relating to service provision and administration. It also includes saved moving costs as a benefit. The Treasury estimated net social benefits per job in light engineering in rural Northumberland and Roxborough (over a 10-year time horizon) at £1,270 and £300 respectively. This compares with a range from £1,082 to £1,685 in this report. Apart from differences arising from prices, the difference in social opportunity cost is probably the main variable explaining the different levels of benefit.

The net social benefits estimated may also usefully be compared with Exchequer costs. In Chapter 7 the construction cost and the total costs of the factory programme, including regional grants and other payments are presented. These two separate estimates of Exchequer cost are related to net social benefits in Table 9.10.

TABLE 9.9 - Social Cost-effectiveness of the Factory Programme.

£ social benefit

Discounted Net Social Benefit to Time Horizon	Denominator units from Cash Flow	Direct jobs	Direct & indirect jobs	Direct jobs otherwise absent	Workers otherwise unemployed (in E.B.)	Employees otherwise outside region	Population otherwise outside region	Cumulative annual employment (person-years)
(years)								
10	AB	1685	1299	2247	4189	3513	1311	426
	BB	1082	835	1443	2691	2257	842	273
25	AB	3518	2714	5027	8744	7331	2737	203
	BB	2828	2182	4042	7029	5894	2200	163
50	AB	4200	3239	6001	10438	8751	3267	105
	BB	3478	2683	4970	8644	7247	2705	87

TABLE 9.10 - Net Social Benefits per £ of Exchequer Cost.

Time Horizon	Cash Flow	Net Social Benefit per £ of total exchequer cost	Net Social Benefit per £ Initial Cost of Factory construction land acquisition and site development
		£	£
10	AB	0.47	0.61
10	BB	0.31	0.39
25	AB	1.39	1.77
25	BB	1.11	1.43
50	AB	1.65	2.12
50	BB	1.37	1.75

NOTE : The aggregate measures of exchequer cost divided into net social benefit were £2.78m for the first column and £2.17m for the second.

The conclusion for this table that net social benefits discounted over ten years are less than the initial outlay from the Exchequer does not, of itself, either justify or condemn the factory programme. Naturally, if the time horizon is extended, more benefits accumulate and social benefits per £ of expenditure substantially exceed £1. But is this a relevant measure of performance? From the assumptions that have had to be made in putting together these estimates we may list the questions which must be answered, in advance of a programme such as this, if its effectiveness is to be adequately assessed. They are:

- what is the relative importance of creating new jobs in the area, retaining population in the area and reducing unemployment?

- what is the urgency of these objectives, that is, how much less important is it to generate employment in year 10, against year 1, year 25 against year 1, and so on?

- is there some cut-off point after which benefits are regarded as unimportant?

The explicit definition of the relative importance of the various objectives of this type of programme by the policy initiator would provide the basis for a more satisfactory assessment of the extent to which the objectives have been achieved. Meanwhile these results may be useful to compare with those achieved, or expected, from other factory programmes.

CHAPTER 10

OTHER DEVELOPMENTS IN THE EASTERN BORDERS

While the factory programme has been the major part of the Development Commission's contribution to development in the Eastern Borders, other initiatives have been taken which have either been directly sponsored from Development Commission funds or which have been instigated or encouraged by its activities and the activities of the Eastern Borders Development Association's Development Committee or its Development Officer. The economic effects of these projects on the local economy are much less easily quantified. Of these projects, greatest attention has been paid to the introduction of food processing into the area, and this is considered in some detail below.

Assistanct to Small Industries

Through the activities of the Council for Small Industries in Rural Areas in England and the Small Industries Council for Rural Areas of Scotland, latterly the Scottish Development Agency, in Scotland, the Development Commission has provided assistance for small firms in the Eastern Borders. Time has not permitted a detailed study of the contribution which these organisations have made locally. However, a study commissioned by the Department of the Environment has been carried out at the University of Aston of the activities of CoSIRA in England and Wales.

The small amount of 'footloose' industry in the country and the importance of the establishment of local companies in the Development Commission factories highlights the importance of a supply of local industries with growth potential which can replace those larger ones which decline.

Local Authority Factory Building

Over the period under review, there has been a substantial amount of factory building carried out by the local authorities in the Scottish part of the Eastern Borders. These factories have been located in Kelso, Eyemouth, Duns, Coldstream, Chirnside and Earlston. On the whole these have been small factory units, although some larger factories have been erected in Kelso. The total area of factory constructed is just over 70,000 sq. ft. in about 36 units (although these are not all occupied by different companies). Two thirds of the floor space is in units of 5,000 sq. ft. or less. It is estimated that employment is provided for 380 people in these factories, i.e. just under a half of that provided by the Development Commission factories, and it is to be expected that their local impact will be in a similar proportion.

A detailed survey has not been carried out of these factories and it is not possible to say to what extent their existence is dependent upon the initial stimulus provided by the Development Commission or the Eastern Borders Development Association.

Border Build-Up Register of Skills

A register is kept of people who are willing to move to the Eastern Borders and take up employment there. This includes both those who want to return to the area and those who have not lived there before. One central register is kept which applies to the whole Border area, although applicants are given the opportunity to indicate any preferences which they have for particular parts of the area. However, it appears that currently, the vast majority of applicants are prepared to consider any parts of the region.

The project was started in March 1970 and within the first month, there had been a total of 392 applications, 261 specifying the Central Borders, 50 the Eastern Borders only and 81 any part of the Borders. About one third of these were in Engineering. (Development Committee

Minutes, 30th April 1970). By September, 1300 questionnaires had been returned with 48 per cent giving preference for the Central Borders, 20 per cent the Eastern Borders and 32 per cent no preference. (Development Committee Minutes, 24th September 1970). Applications have arisen from a wide cross-section of the country, the majority coming from Central and West Scotland, Tyne and Wear and the Midlands.

TABLE 10.1 - Analysis of the Border Build-up Register (as at 21.11.76).

Engineering	125
Construction	126
Miscellaneous Unskilled	133
Clerical	73
Paper Production and Printing Operations	11
Textiles	21
Electrical and Electronics	7
Motor Trade	12
Transport	45
Other Services	18
Chemical Industry	5
Medical	4
Miscellaneous	1
Professional and Executive Recruitment	25
TOTAL	606

SOURCE : Brown, G.T., Job Centre, Galashiels, Personal communication, August 1977.

Over the past 12 months, particulars of 108 Border Build-Up registrants have been submitted to various local employers for consideration, although the majority of these have been unsuccessful.

The performance of the Border Build-Up project, after an apparently encouraging start, has been generally disappointing due to a number of difficulties such as lower wages being paid in the Borders, housing, and more recently, the economic situation with its

resultant cut-back in employer recruitment. It has not been possible to identify the contribution which this project has made to development in the Eastern Borders. It appears, however, that a greater use has been made of the Employment Transfer Scheme.

Local Authority Housing Guarantees

The Development Commission has provided funds in order to guarantee the availability of local authority housing for incoming workers. This has been achieved by means of the Development Commission undertaking to pay rents while they have been held empty. The cost of this scheme has been included in the total cost of the project to the Exchequer, considered in Chapter 6. Most of the houses guaranteed have been in Berwick, although some have been guaranteed in Coldstream more recently. The availability of local housing appears to have been an important factor in encouraging employees to move into the area and in the light of the difficulties experienced in attracting labour, this scheme would seem to have been a valuable contribution.

Food Processing in the Eastern Borders

The possibility of field-scale vegetable production for local processing in the Eastern Borders appears to have been first considered in 1968. There were a number of possible benefits which it was felt could be achieved. These included the provision of valuable break crops for local farmers and the creation and maintenance of employment both in agriculture and in food processing which could provide benefits throughout the area.

Preliminary investigations by the Eastern Borders Development Association with the assistance of the Edinburgh and East of Scotland College of Agriculture indicated that there was adequate land which was suitable for vegetable production to support a food processing complex (Reid, 1968). It was estimated that an annual crop of between 20,235 to 32,376 hectares under vegetables for freezing and canning

could be built up over 10 to 15 years. The area could also provide the necessary process water and facilities for industrial effluent disposal, access to national and international transport systems and adequate urban growth prospects which could provide suitable sites for a processing plant.

On the basis of these expectations a symposium was jointly organised by the Eastern Borders Development Association and the Scottish Council (Development and Industry) and held in December 1968. This was attended by over 120 farmers, processors and representatives of other organisations.

Following this symposium, it was decided to establish a steering committee on which the Development Committee of the Eastern Borders Development Association, farmers and other producers and the Advisory Services would be represented. This was convened in January 1969 and with this were associated technical working parties to examine specific aspects of food processing; Raw material production, Processing and Cold Storage, Water and Effluent Disposal, Labour and Transport.

It was quickly decided that it would be necessary for a consultant to be engaged who could carry out a feasibility study and an application was made to the Development Commission for finance. The terms of reference for this study were agreed upon with the Development Commission who sponsored the work. The consultants, Thomas Fleming Associates, were commissioned in May 1969, and the report was completed in March 1970 (Thomas Fleming Associates, 1970). A number of aspects were examined, including potential markets for processed vegetables, the potential of the area to produce vegetables and the types which would be suitable, the requirements of management and co-operation, the buildings and equipment which would be needed by producers, processing and cold storage plants, water supplies and effluent disposal and the labour demand and availability. This concluded that the market for processed foods would continue to grow and that the demand would be likely to surpass the capacity of the existing

producing areas. Also, that physical factors in the project area were suitable for the production of a range of horticultural crops on an economic and competitive basis. Suitable sites for processing plants existed and there was adequate labour and farmers with the capacity to master the necessary management techniques.

> "If practice confirms that there is at least 90,000 acres of land suitable for horticultural crops in the project area, and if markets grow to provide outlets, 20,000 to 30,000 acres of this land could be under horticultural crops in any one year." (Thomas Fleming Associates (1970)).

However, they considered that rapid development was unlikely and that a food processing complex would have to grow from small beginnings.

Crop trials were also undertaken jointly by the East of Scotland College of Agriculture and the National Agricultural Advisory Service.

Trial plots were first established in 1969, on farms in the area and these were available for inspection by those interested in vegetable production. Five trials were conducted in 1969 and satisfactory yields were achieved with peas, leeks, potatoes and for canning, beetroot and brussels sprouts. Further trials in 1970 and 1971, which were supported by the Development Commission demonstrated the potential of the area to produce a range of vegetable crops suitable for freezing.

On the basis of these feasibility studies a co-operative group, the East Lothian and Borders Association of Growers (Elba Growers) was formed. They then commissioned a further study from the same consultants to investigate the financial aspects of the proposed vegetable production and processing.

The decision to grow was taken and the first year's output sent to a contracting processor who had established in Fife. This decision led to the creation of five production groups each being an independent co-operative business in its own right. Approximately 650 tons of sprouts and 750 tons of peas were produced by 21 participating

members. Because of difficulties arising from the processing in Fife, it was decided to build a production facility in Eyemouth. This was opened in July 1973, immediately before the pea harvesting season, and had an annual capacity of approximately 3000 to 3500 tons of vegetable products. Further expansion was commissioned in 1973 and completion of this work in 1974 raised the potential output to 8000 tons and included the provision on site of a 600,000 cubic foot cold store.

The crops currently grown and processed include peas, broad beans, cauliflower, carrots, turnip, swede, cabbage, brussels sprouts and onions.

The growth of the business can be illustrated by the total areas of vegetables which have been grown by members for the co-operative.

	1972	1973	1974	1975	1976	1977
Acres	574	1051	2488	2487	2373	2625
Hectares	(232)	(425)	(1007)	(1006)	(960)	(1062)

SOURCE : Elba Growers

One factor which heightened local producers need for a break crop was the closure of the sugar beet factory at Cupar in Fife in 1971. The contribution which the development of food processing in the Eastern Borders has made to local agriculture can be demonstrated from the changes which have taken place in cropping, Table 10.2.

Most of the growers producing vegetables for Elba Growers within the Eastern Borders as defined for this study are located in Berwickshire. If it is assumed that all the increase in vegetable production in Berwickshire between 1970-1975 is attributable to Elba Growers, the amount of labour required to produce this and a change in gross margin can be calculated.

TABLE 10.2 - Changes in Land Use in Relation to Sugar Beet and Peas 1971-1975 in Berwick, East Lothian and Roxburgh.

(hectares)

Crop	Units growing Sugar Beet		Other Units	
	1971	1975	1971	1975
Sugar Beet	642	-	-	-
Peas	32	363	153	1068
Vegetables less Peas	41	140	1460	1270
Cereals	6622	6886	65201	65899
Potatoes	808	672	3647	2819
Forage Crops	496	572	8950	8955
Fruit and Other Crops	11	106	151	197
Fallow	24	8	568	251
Tillage	8676	8747	80130	80459

SOURCE : Toulouse (1977)

TABLE 10.3 - Vegetable Production in Berwickshire

	1970* (ha)	1975* (ha)	Standard Man Day requirement*** (per ha)	Gross** Margin (£/ha)	Increase in labour requirement (SMD)	Gross gain to Total Gross Margin £
Peas	-	527	7.4	310	3900	163,370
Beans	-	96	9.9	660	950	63,360
Cauliflower and Broccoli	1	30	49	680	1421	19,720
Cabbage and Savoys	3	13	49	805	490	8,050
Brussels Sprouts	1	61	49	140	2940	8,400
Total	5	727			9701	262,900

* Department of Agriculture for Scotland (1971 and 1976) Scottish Agricultural Statistics, Edinburgh, HMSO

** Nix, J. (1976) Farm Management Pocketbook, Wye College, University of London.

*** Ministry of Agriculture, Fisheries and Food, (1970), Terms and Definitions Used in Farm and Horticultural Management, London, Ministry of Agriculture, Fisheries and Food.

The main reduction of areas has taken place in sugar beet (as a result of the factory closure), potatoes and of fallow land.

TABLE 10.4 - General Cropping Change in Berwickshire 1970-1975.

	1970 (ha)	1975 (ha)	Change (ha)
Sugar Beet	257	-	-257
Potatoes	1401	1050	-351
Fallow	196	71	-125
Total	1854	1121	-733
Vegetables for human consumption	36	764	+728
Total Tillage	34798	35558	+760

SOURCE : Department of Agriculture for Scotland (1971 and 1976) Scottish Agricultural Statistics, Edinburgh, HMSO.

Over the period there have also been increases in other crops, such as cereals (+444 ha) and forage crops for animal feed (+238 ha). Land suitable for vegetable growing is likely to have been cropped prior to its use for vegetable production and so it has been assumed that the increase in vegetable production has displaced the sugar beet, potatoes and fallow land, rather than having been met from new tillage. However, the closure of the sugar beet factory has meant that sugar beet production was no longer an option in this area, so that, in order to measure the impact of the increased vegetable production, comparison should be made with the crops by which the sugar beet would have been replaced. A possible alternative cropping of the land under vegetables in 1975 is shown in Table 10.5.

TABLE 10.5 - Possible Alternative Cropping of Land Used for Increased Vegetable Production.

	ha	SMD/ha	Gross Margin /ha (£)	Decrease in labour requirement (SMD)	Decrease in Gross Margin (£)
Potatoes	346	37.1	690	12837	238,740
Fallow	123	1.2	-	148	-
Replacing:					
Sugar Beet	(253)				
Potatoes	9	37.1	690	334	6,210
Fallow	1	1.2	-	1	-
Cereals	243	4.9	217	1191	52,731
TOTAL				14511	297,681

These figures suggest a reduction of labour requirement on farms in Berwickshire of 4810 standard man days due to changes in the cropping pattern. If it is assumed that 250 SMD represent one man year, this amounts to 19 man years. The reduction in gross margin indicated is £34,781. This lower labour requirement does not mean that 19 men will loose their jobs as a result of this change, due to

the distribution of this reduction over many farms. However this trend will place pressure on farmers in the longer term to employ fewer workers.

It is not known how the pattern of cropping would have changed had either the sugar beet factory not been closed or if vegetable production had not been established. While the changes indicated appear to have led to a reduction of on-farm labour requirement, the employment locally in vegetable processing has more than outweighed this loss. It seems likely that over eight times this reduction are employed in processing activities. The introduction of food processing will have increased the value of the agricultural produce sold from the area as well as leading to some further concentration of population in Eyemouth.

Other Developments in the Eastern Borders

The Eastern Borders Development Association has, over the period given publicity to the region and encouragement for companies considering establishing there. One example of this is the re-establishment of paper production in Chirnside, which currently employs over 220 people, one half of whom moved into the area from outside. However, the contribution which this work has made generally to local development can not be evaluated. In making decisions about relocation, companies are likely to give highest priority to such factors as availability of a factory and an adequate labour force. This applies to both factory tenants and other companies. The role of EBDA must be in bringing the possibility of establishing in the Eastern Borders to the attention of potential movers. However, having moved, managers will be likely to give the reasons for the location decision in terms of potential labour force, factory space and other local facilities and not the fact that the existence of these facilities was brought to their attention by any one particular group. It is, thus, difficult to assess the contribution made by development agencies in attracting mobile companies to their areas.

CHAPTER 11

A POSTSCRIPT ON EVENTS SINCE 1977

This research project began in 1976 and the field work underlying it was mostly carried out in the first few months. No new data were collected after the end of 1978, but it did seem worth enquiring whether the situation in the Development Commission factories had changed over that period. In this chapter the employment growth experienced since 1977 is compared with the expectations of managers in that year. Then, information about the new Development Commission factory tenants and their employees is presented.

Employment Growth in the Development Commission Factories

At the end of 1978 a survey was undertaken to establish whether there had been any important changes in the companies operating in Development Commission factories since the initial interview, eighteen months earlier. Details of the level of employment at the end of 1978 in the ten companies which had been previously interviewed are shown in Table 11.1.

TABLE 11.1 - Total Employment in factories operating in 1977, at end of 1978.

	Male	Female
Full-Time		
Managerial and Clerical	65	53
Skilled Workers	196	61
Apprentices	36	-
All Others	84	220
Part-Time	4	63
TOTAL	385	397

This employment may be compared with the numbers employed previously which were shown in Chapter 3. The overall level of employment had increased by 19 per cent during this period. The greatest proportional increase was for skilled female employees while there was a decline in the number of 'other male' employees. The overall level of growth was somewhat less than had been anticipated by the factory managers. When interviewed they indicated that they hoped to be employing 867 people (446 males and 421 females) in one year's time from the date of the interview. In fact the employment after eighteen months is 782 (385 males and 397 females), i.e. 85 less than hoped for and 123 more than were employed previously. While most companies are actually employing fewer people than they had anticipated two companies are employing more, one substantially more, following an increase in the area of floorspace available and further expansion is expected. A further 36 employees have moved into the Eastern Borders in order to take up employment with these companies. On the whole the companies continued to produce the same products. One company had introduced automation on certain production processes and one had introduced a new product. Three companies had firm plans for future expansion although it is not sure what the employment implications of these plans will be. One company which was not interviewed is moving out of the area.

These figures do suggest that the initial estimates of the future level of employment were over-optimistic. It is not known whether these recent figures indicate a lower overall level of employment in the factories or whether it will just take longer for the original target to be achieved. The estimates made at the initial interview of the numbers which could be employed in five year's time were based on optimistic assumptions and on the basis of the managers' recent firm plans for future expansion it appears likely that these will not be achieved in the near future.

Taking into account the initial actual and expected levels of employment in the companies, the numbers currently employed and the indications given of firm plans for future expansion, the total

level of employment was re-assessed for the predictions of Exchequer returns and for the estimates made of the resource effects of the Development Commission policy. This reduced the number expected to be employed in 1982 (five years from the initial survey) from 1238 to 1096.

New Entrants to Factories in the Eastern Borders

Since the original survey of factories was undertaken a number of companies have occupied factories in Berwick upon Tweed, Duns and Kelso. Visits were made to all of these in Autumn 1978, to determine the types of company which are currently establishing in the area. A list of new entrants is shown in Table 11.2.

TABLE 11.2 - Size and Occupation Date of New Factories.

	Size of Factory (sq.ft.)	Occupation Date
Berwick upon Tweed		
1	30,000	3.77
2	9,817	10.77
3	2,906	8.77
4	4,404	7.77
5	7,310	11.77
Kelso		
1	5,356	7.77
2	5,000	7.78
Duns		
1	4,000	5.78

A range of activities are pursued in these factories: four are light engineers and the others are a film processor, an electronics company and a domestic textile manufacturer. Altogether 143 people are currently employed in these companies. This number is broken down in Table 11.3.

TABLE 11.3 – Distribution of New Factory Employees by Sex and Type of Work.

	Male	Female	Total
Full-Time			
Managerial and Clerical	17	9	26
Skilled Workers	44	9	53
Apprentices	8	–	8
All Others	47	7	54
Part-Time	–	2	2
Outworkers	–	30	30
Total	116	57	173

One feature which appears to be different from those previously in occupation is their expected alternative position in the absence of the availability of a factory in the Eastern Borders. All but one of these companies was established in the area prior to its allocation to an advance factory. The length of time which they had been in operation in the area varied from $2\frac{1}{2}$ to 39 years. The other company was previously not in existence and had in fact been allocated its factory at the end of 1974, although construction of an extension and alterations had delayed the start of production. Thus, no new companies have been attracted to either move into the Eastern Borders or to establish a new production process in these factories in the past eighteen months. This experience presumably results partly from the national level of economic activity and partly from the intense competition which exists, between different regions, for new factory tenants. The companies which have been allocated these factories over this period were all previously occupying smaller premises in the Eastern Borders area and were in a position where they felt able to expand their business but where new or expanded factory space was required. However, under these circumstances, an assessment of the alternative position becomes more crucial to an estimation of the contribution which the availability of a factory has made to local employment levels.

Companies wishing to expand, but whose ability to do so is restricted by the amount of space which they have available, have two options in the absence of an advance factory being available. They may either extend their existing premises, find a larger building or construct their own factory, so enabling expansion to take place, or they may continue without any change, keeping the same size of business. The extent to which these companies fall into this latter category, so that the availability of an advance factory has encouraged an expansion of the business, and therefore probably the numbers of people employed, determines the extent to which overall employment has been expanded in the Eastern Borders.

In the case of most companies, it was felt that the advance factory has enabled the company to expand its business, although some managers indicated that they would have sought an alternative factory, or constructed one for themselves if Government provided factories had not been available. Of the total number of jobs in these factories at present (116 male and 27 female), it appears that 55 (44 male and 11 female) would have been available in the Eastern Borders in the absence of the provision of advance factories. If the company which was allocated its factory in 1974 is excluded from these totals, it appears that 65 per cent of the jobs would have been available in the area at the present time. The contribution which these factories make to employment must be viewed in terms of the ability which they give to companies to expand to a size beyond that which they could have achieved otherwise and so is likely to be experienced as an increase in the number of jobs available over the next few years. If the factory managers' plans for expansion to go ahead as proposed then an increase in the numbers of males employed of about one third and an increase in the number of females by nearly one half will result. The level of expansion which these companies achieve is to some extent likely to be both greater and sooner than would be the case in the absence of the factories.

Factory Employees

When the managers were interviewed, the questionnaire which was previously used to survey employees in the first survey was again circulated. Replies were received from 47 people, representing one third of the total number of employees in the factories. This response rate is almost exactly the same as that achieved earlier. This provided results which may be compared with the earlier information.

A much higher proportion of the employees in the recent factories were males. This was over 80 per cent compared with just under 50 per cent and the proportion of males and females responding to the questionnaire is similar to the proportion working in these factories overall. This has meant that 38 replies have been received from males and 9 from females. The smaller size of this sample means that less confidence can be placed on the respondents' representativeness of the employees in these factories as a whole. This is particularly true in the case of the females.

Just under two thirds of the respondents worked in the new factories in Berwick upon Tweed. The others were from Kelso with a few from Duns. Over 80 per cent of the respondents were directly involved with production in the factories. Fifty five per cent of the respondents, including all the females indicated that their weekly take home pay was below £50 per week. Eighteen of the male respondents (50 per cent) earned between £51 and £70 per week. The pattern of change in take-home pay on taking up jobs in these factories was less surprising than was the case in the previous survey. This is shown in Table 11.4.

A note of caution should be made in the interpretation of these statistics. While none of these companies had actually been operating in the factories for more than two years, 9 respondents indicated that they had been employed 'in this factory' for more than two years. They have presumably interpreted this as meaning how long

they had been employed by this company. The questionnaire was not designed with companies moving only small distances within the Eastern Borders in mind, so that the distinction between 'this factory' and 'this company' was not emphasised. This same factor could cause some difficulty in the interpretation of questions concerning previous situations.

TABLE 11.4 - Changes in Weekly Take-home Pay on Taking up Factory Employment by Previous Situation.

	School	Registered unemployment	This Company	Factory	Services	Other	Total
-£2-3	-	-	-	1	-	-	1
-£1	-	-	-	1	-	-	1
No change	-	1	5	3	-	-	9
+£1	-	-	-	2	-	-	2
+£2-3	-	-	1	2	-	1	4
+£4-5	2	2	-	-	-	-	4
+£6-10	-	1	1	2	-	2	6
+£11 or more	2	5	-	2	1	-	10
Not given	3	3	1	2	-	1	10
Total	7	12	7	15	1	3	47

Only two people indicated a drop in take-home pay in taking up factory employment and both of these had been employed in another factory previously. Nearly half of the respondents had previously either worked for this company elsewhere or in another factory. This is a higher proportion than that found in the first survey, where only about one quarter were in this category. Only 3 per cent of respondents in the first survey said that they were employed by the same company elsewhere, compared with 17 per cent here. This difference is to be expected in view of the different sources of the companies. About one quarter had previously been registered as unemployed and 15 per cent at school. This is a higher proportion from unemployment

than in the first survey, where the figure was just under 12 per cent; the proportion from school was very similar. None of the respondents had previously been unregistered unemployed. In view of the very small numbers of females included in the survey, too much significance should not be attributed to this. A higher proportion, just under half, believed that they would have remained in their old job if a job in the factory had not been available. The proportion indicating that they would have left the area was slightly lower; 9 per cent compared with 12 per cent.

The mode of travel to work is compared with the first survey in Table 11.5.

TABLE 11.5 - Mode of Travel to Work, Recent Factory Entrants and First Survey.

Mode	Recent Factory Entrants		First Survey
	No.	%	%
Car	26	55	42
Walk	7	15	34
Bus	1	2	10
Company Transport	12	26	10
Motor Bike	1	2	2
Other	-	-	2
Total	47	100	100

The most outstanding feature of the travel to work pattern is perhaps the higher proportion of employees using company transport. However, this group in fact travelled a shorter distance (1.4 miles) than the average of all respondents (3 miles). The larger amount of company transport has probably resulted from the fact that a number of these companies provide services to customers outside their factories, so that more vehicles are available and so used for travel to

work. There is no evidence that recently appointed employees travel further to work than others. The average travel to work distance was about half a mile less than the average in the first survey.

These employees were on the whole younger than those in the first survey, which itself indicated a lower average age than the working population in the area as a whole. Seven out of nine females were under 24, the other two both being below 44. Twenty five out of 36 males were under 34. Just over half the males and under half the females were married, and they indicated a total of 40 children.

The employees replying to this questionnaire indicated a similar pattern to those represented in the first. They are on the whole young and earning relatively low wages. The slightly lower percentage indicating that they would have left the area in the absence of their present job, could be seen as an encouraging sign that the development of local industry has given the employees greater confidence in remaining in the Eastern Borders. However, as pointed out before, the small size of the survey precludes firm conclusions being drawn from these data.

CHAPTER 12

SUMMARY AND CONCLUSIONS

In this chapter we draw together the main findings of the report and state some broad conclusions from the research project. The summary presented here attempts to draw together some of the material presented in the report and therefore does not always precisely follow the sequence of the report. The number of the chapter from which material is taken is noted in the text so that further detail can easily be found.

Summary of Findings

The Eastern Borders, centering on the major town of Berwick, is a remote area which includes parts of North East England and South East Scotland. It has lost population over a long period which has been associated with falling employment in the primary industries. In 1961 the Eastern Borders Development Association (EBDA) was established to encourage economic development. In 1966 the Development Commission designated the area as a 'special investment area' and began a factory programme which was administered locally by the Development Committee of EBDA.

That scheme continued until 1975 when EBDA was dissolved and responsibility for the development is now taken separately in England and Scotland. Throughout the operation of the scheme industry in the area has been eligible for assistance through government regional policy. Development Commission factories have been constructed in the larger settlements, with the greatest number in Berwick.

The long-run population decline in the Eastern Borders began to slow down in the 1960s when the urban population of the region began to increase. During the 1960s there has been a substantial

exodous of population from rural areas and some gain in population of the urban areas. After 1971 there has been some sign of an actual increase in the population of the region despite falling birth rates and an increase in rural death rates.

The structure of employment has changed over the period since 1961 showing a steep decline in primary employment which has been partly compensated by an increase in manufacturing.

Male activity rates are low in the region but those for females have increased though the rates for rural females remain well below the national average. Unemployment has grown in the Eastern Borders throughout the 1960s and 1970s, as it has elsewhere in the U.K. Most workers in the Eastern Borders live in the Local Authority in which they work, over 80 per cent of journeys to work are either on foot or by private transport. During the period 1969-72 the stock of houses in the Eastern Borders increased by 2000 of which more than two thirds were local authority housing.

Since 1966 the Development Commission's involvement in the Eastern Borders and its programme of factory development in the area has continued to expand. Twelve Development Commission factories were in occupation when a survey was carried out in the Spring of 1977 and there were a further eight new tenants in factories when a final survey was carried out in the Autumn of 1978. In the initial survey the majority of companies had come from outside the area and most of their output was being exported from the area. The more recent tenants, however, with one exception, had all been in operation in the area before moving to a Development Commission factory.

The multiplier effect of the factory programme is estimated (Chapter 5) to account for a substantial addition to local employment. The initial calculation was that 788 jobs were generated in the factories and a further 234 were associated in secondary employment, of which 103 were in local services and distribution, 54 in providing factory supplies and services, 15 in construction and 62

in public administration. The total of 1022 direct and secondary employees are then distributed amongst registered unemployed (164) unregistered unemployed (153) potentially redundant (51) people who would not have migrated into the area (163) people who would have migrated from the area (215) those who would have retired (20) and those who would have been employed anyway (256) in the absence of the factory programme. The extra population in the Eastern Borders as a result of the programme was estimated to be 1013, consisting of 378 employees, 254 spouses and 381 children.

Examination of the relationship between factory tenants expected levels of employment in 1978 (as expressed early in 1977) and the level of employment they attained in 1978 indicated that expectations had been somewhat optimistic (Chapter 11). Accordingly the level of employment estimated in 1982, from the factory programme, was adjusted downwards from 1238 to 1096. This change has produced some consequential adjustments in the estimates in the rest of the report, indicating a need for caution in comparing the present results with those in the first interim report.

The impact of the factory programme on total population in the Eastern Borders (Chapter 6) has been to increase it by one and a half per cent. The effect on the age distribution of the population has been uneven because those retained in the area tend to be concentrated in the 25-44 age group. Population projections, based on the restrictive assumption of no further net migration from the area, show an increase in the male population of working age.

The flow of Exchequer costs and revenues (Chapter 7) are analysed in some detail over various time periods. Over 10 years the factory programme brings a net loss to the Exchequer which (discounted at ten per cent) amounts to £1607 per factory job, or £3,998 per worker otherwise unemployed. Discounted over 25 and 50 years the Exchequer revenue is positive, as returns due to savings in unemployment benefit and extra tax revenue offset the initial costs of the programme. These net revenues amount to £107 and £592

per factory job and £186 and £1030 per person otherwise unemployed, discounted over 25 and 50 years respectively.

Sensitivity analysis (Chapter 8) of the estimated effect of the programme shows the results to be robust. As individual assumptions are varied by up to 50 per cent the maximum resulting divergence of estimated population retained in the area from the initial 'central' estimate was up to ten per cent. Varying groups of assumptions by ten per cent in ways expected to reinforce each other produced up to 30 per cent divergence in estimated population impact.

Turning to the broader based estimates of net social benefits and costs of the programme (Chapter 9) it was found that the present value of net social benefits (discounted at ten per cent) was positive over 10, 25 and 50 years. Net social benefit per factory job varied from £1000 to over £4000, whilst per person otherwise locally unemployed, it varied from some £2700 to over £10,000.

During the $2\frac{1}{2}$ years since the research project was begun eight factories have become newly occupied. Comparison of these recent tenants with those of longer standing shows them to be similar in many respects. However, in one important respect they do differ, namely in the previous location of the firm. It had been concluded from the initial survey of tenants that 25 per cent of factory jobs would have been present in the Eastern Borders even without the factory programme. However, for the recent tenants it was found that the proportion would be 65 per cent.

Having summarised the main findings we may now examine four broad questions which flow from them. These relate to, first, the viability of the factory programme; second, the relevance of Exchequer and social costs; third, the impact of the recent factory tenants on the general conclusions from the project, and fourthly, some questions for further research.

Viability of the Programme

The calculations in Chapters 7, 8 and 9 indicate that, by any conventional economic standards, the factory programme is very attractive. Financially the returns to the Exchequer, over 25 years, are sufficient to pay for the factory programme using a ten per cent discount rate. Similarly the balance of social costs and benefits is positive when discounted even over as short a period as ten years. These calculations thus underline the value of such programmes.

However reservations about such calculations should not be ignored. Particularly, it must be remembered that these calculations are virtually all *ex post*, that is they have examined whether a decision made ten years ago turned out to produce a profitable result. The fact that the result is profitable does not necessarily validate the initial decision unless it can be shown that the expectations surrounding the initial decision have in fact come to pass. Without a painstaking examination of the process by which this factory programme was initiated it would be difficult to reach firm conclusions on this point. However it is clear that the factory programme was not preceded by a formal *ex ante* asessment of its likely effects. In the absence of such an appraisal it is difficult to know whether the expectations which guided the initial decision were well founded or not.

It is, nevertheless, illuminating to reflect on the changes in economic circumstances in the Eastern Borders since the programme was initiated. The main one of these is, of course, the high rate of unemployment which is currently being experienced, both in the Eastern Borders and in the U.K. as a whole, and which has been a notable feature of the 1970s. The importance of this rate of unemployment in contributing to the success of the factory programme as measured has been pointed out at several stages. It is also undoubtedly true that when the factory programme was initiated such rates of unemployment were not expected. To the extent, therefore, that the benefits of the factory programme which have been measured in this report arise

from an unexpected development in the labour market we should be careful in attributing success to the programme itself. Insofar as the 'success' is fortuitous we should not rush to extend the results found here to other situations.

This point can be put somewhat more positively. We should recognise the substantial contribution made by programmes such as this to reducing the level of unemployment and the direct profitability to the Treasury of doing so. However, we should also recognise that the performance of such programmes will be drastically improved by a high level of unemployment and we should conclude from this that the need for such programmes is strongly related to the level of unemployment.

Exchequer or Social Costs and Benefits?

In Chapter 7 estimates of the net effect on the Exchequer of establishing the factory programme were presented, together with the costs of factory construction and establishment. These are conceptually different from the social benefits which have been estimated at length in Chapter 9. The traditional interest in Exchequer costs in the public sector arises mainly from the needs of public accountability. However, more recently there have been attempts to use such information for management policy purposes, for example the Development Commission (1972) study of Mid-Wales. The relevance of such information in a practical situation is essentially a matter of objectives. If the objective is to produce a given result at a minimum of Exchequer cost then such measures can easily be deduced and may be useful in decision-making. Some possible measures have been presented in Chapter 9 in a form which would provide a basis for comparison of alternative policies.

It can also be argued that public agencies are set up to pursue the public good in some much wider sense than that of providing a service at the lowest possible Exchequer cost. This wider role would indicate that they should be seeking to contribute the maximum

possible social benefits, as a central objective. According to this view, the appropriate measure of success of particular policies would be the size of the net social benefits they generate. Such estimates have been presented in Chapter 9. The disadvantage with using a net social benefit criterion is that the information cost of measuring all relevant variables is comparatively high. Thus it is extremely difficult to produce firm estimates of social cost without collecting a vast amount of information and, often, the exercise can be defeated by the cost of collecting information. The estimates of social cost and benefit produced in this report have been put together fairly cheaply but they are not as 'hard' as the Exchequer costs which have been measured.

The type of information which decision-makers demand must thus be a matter of whether they prefer the firmly based, though narrower, measures deriving from Exchequer cost or whether they prefer to proceed with more relevant but less firmly established measures of social cost and benefit. This is a matter for judgement and one which might usefully be examined jointly by decision-makers and economists together in particular situations.

The last estimates that are presented in Chapter 9, relating to the net social benefits per £ of Exchequer cost would be relevant as criteria or standards of performance for an agency seeking to maximise net social benefits from a constrained budget. Naturally, since there are no other precisely similar calculations for other policies at present being pursued, it would be difficult to use these particular measures to draw strong inferences from the calculations in this report. They are, nevertheless, presented here in the hope that they will be of relevance to future situations where similar measurements can be made.

In addition to deciding on the question of Exchequer or resource cost it will also be desirable in advance of a factory programme to review some of the other questions raised in Chapters 7 and 9 so that objectives can be clarified before the programme begins. For example, it would be useful if the relative importance

of jobs in the next ten years as against the next fifty years could be assessed and whether the aim of the programme is to retain population, reduce unemployment, or simply to contribute to economic growth in the region.

The Recent Tenants

From our surveys amongst the recent factory tenants (that is, those who have started their tenancies during 1977 and 1978) it is estimated that 65 per cent of the employment in those factories would have been present in the Eastern Borders even if the factories had not been built. The conclusion contrasts strongly with the findings of the first stage of the study; in particular it is much higher than the 25 per cent which was estimated in Chapter 4.

These new estimates have not been incorporated in the calculations of the rest of the report except in Chapter 8 where they were taken as the basis for subjecting the estimates of demographic effects of the factory programme to wider sensitivity tests than had previously been intended.

It will be recalled from Chapter 6 that the factory programme could be credited with increasing the population of the Eastern Borders by 1013 on the basis of the 25 per cent assumption. However, raising this proportion to 40 per cent would reduce the estimated population increase to 821 and raising it to 65 per cent would reduce it to 493. These calculations demonstrate the very central importance of this assumption in determining the results of the factory programme.

Because this finding arose during the final stages of the project this assumption has not been applied to the rest of the calculations in this report. However, it is important at least to speculate as to what effect it would have on these calculations if this (65 per cent) proportion was found to be generally applicable in an area. First there is no reason to assume that it would affect the Exchequer costs of factory construction or the level of grants and subsidies which are applied at that stage of a programme. But secondly it is likely

that, if such a high proportion of workers would have been employed whether or not there was a factory programme, the proportion of workers coming from an unemployed situation to work in the factories would naturally be a good deal lower. This would mean that the programme produced fewer savings in unemployment benefit and other social security payments and hence the rate of return to the Exchequer would be much less. Similarly it would imply that the social opportunity cost of labour was a good deal higher than has been estimated here and hence the net social benefits of the factory programme would be correspondingly less. Finally, because this 65 per cent proportion will drastically reduce the number of new jobs in the region attributable to the factory programme the cost-effectiveness measures in Table 7.2 and 9.9 will all be very much higher.

It can be seen from this discussion that the existence of a high proportion of employees in Development Commission factories who would have been employed had those factories not been established has a marked effect on the attractiveness of the factory programme as public investment. It would reduce both the savings to the Exchequer obtained through people being brought back into active employment and the social benefits measured from the same cause. It would spread the (unchanged) capital costs of the factory programme over a much smaller number of heads, making the cost per unit a great deal higher. The effect on net social benefits per head is less clear, however, because it would depend on whether the reduction in aggregate benefits was more or less than completely offset by the reduction in the number of heads.

The main lesson to be learned from this change of events is that the economic success of factory programmes depends very much upon the extent to which they are successful in providing jobs for those who otherwise would not have been employed and that, to the extent that they merely provide slightly more appropriate premises for firms who already are active in a region their impact on the regional economy will be comparatively slight. It may be that, in the present situation, with a large number of regional development

agencies all competing to attract employers, a heavy rate of unemployment depressing the labour market and lowered mobility of firms, it is extremely difficult for the Development Commission to attract factories to the Eastern Borders from outside the area. Perhaps the situation may have become more difficult in the last few years as different agencies have begun to compete with each other in trying to attract mobile firms. This would account for the apparently sudden change in the origin of factory tenants. However, to the extent that the Commission has scope to choose tenants it clearly can contribute more within a particular region by actively seeking tenants from outside it.

Further Work

The main uncertainties associated with the results presented in this report arise from our lack of detailed understanding of rural labour markets and their interaction with those of adjacent regions. In particular, knowledge of migration and the way in which it is motivated would allow much firmer prediction of the effects of setting up factories in rural areas suffering from high unemployment. In order to provide such information for this study a postal survey of factory employees was carried out and this has provided a basis for much of the analysis presented here. An earlier recognition of the central importance of such information would have led us to place greater emphasis on this matter in our initial research planning.

Further studies would do well to note the difficulty that has been encountered here and to make appropriate provision. It does seem that this is an important conclusion from this study and is one which, hopefully, will lead to better planning in other work.

The other aspect which this study has not so far tackled is that of making *ex ante* assessment of the performance of a factory programme. However, the initial contract establishing this research has been extended to enable such a study to be carried out in Durham and it is intended that this work will begin as soon as suitable staff can be recruited. The benefit of conducting such a study at this stage is that it will indicate the likely effectiveness of such a factory programme and will provide information which will enable appraisal of the prospects for other factory programmes to be made more quickly and easily. In the long run this should allow *ex ante* appraisals to be made on a regular basis before factory programmes are initiated.

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APPENDIX 1

Administrative Areas in the Eastern Borders

Local Government Organisation

The local government areas before and after local government reorganisation are shown in Figures A1 and A2 respectively. On the English side of the border this took place on 1st April 1974 and on 16th May 1975 on the Scottish side. Prior to these dates, the area was made of the following local authorities:

Coldstream Small Burgh Duns Small Burgh Eyemouth Small Burgh Lauder Small Burgh East District Middle District West District	Berwick County (all)
Kelso Small Burgh Kelso District	Roxburgh County (part)
Berwick upon Tweed Metropolitan Borough Belford Rural District Glendale Rural District Noram and Islandshires Rural District	Northumberland County (part)

It is these areas to which the 1971 census relates, and for which most of the data are available. Since re-organisation, the area in Scotland is no longer bounded by the local authority areas.

Berwickshire District part of Roxburgh District part of Ettrick and Lauderdale	Borders Region (part)
Berwick upon Tweed Borough	Northumberland County (part)

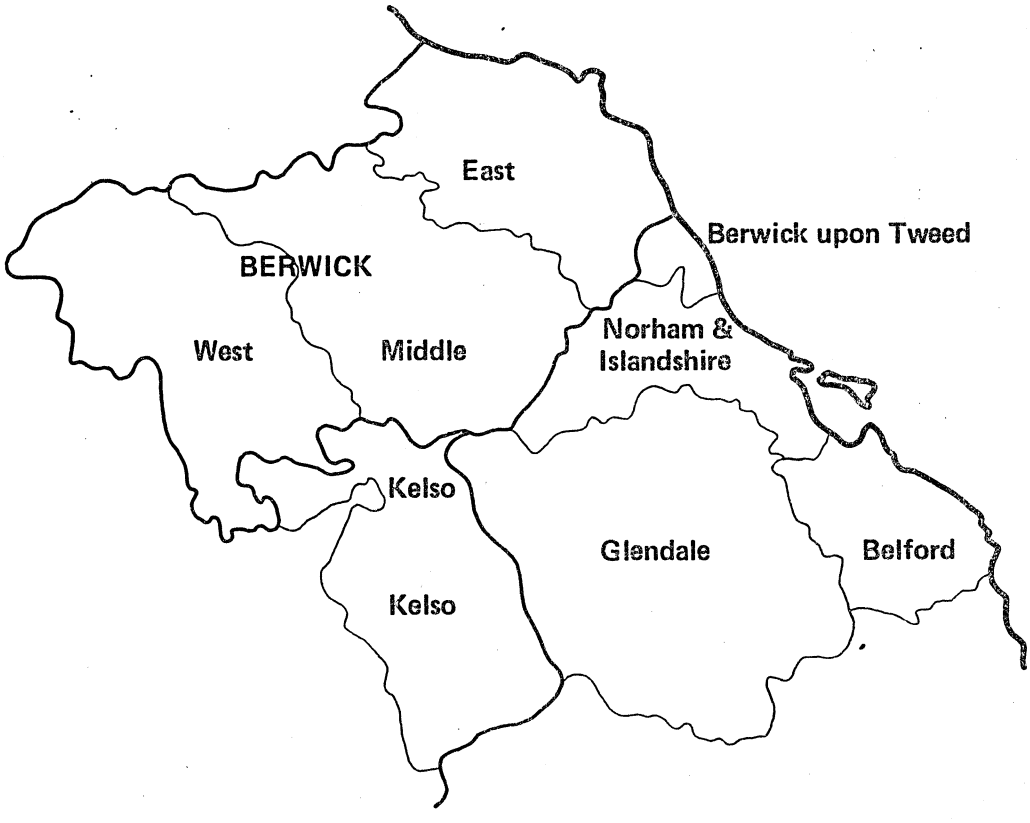

Figure A1 EASTERN BORDERS (PRE–REORGANISATION)

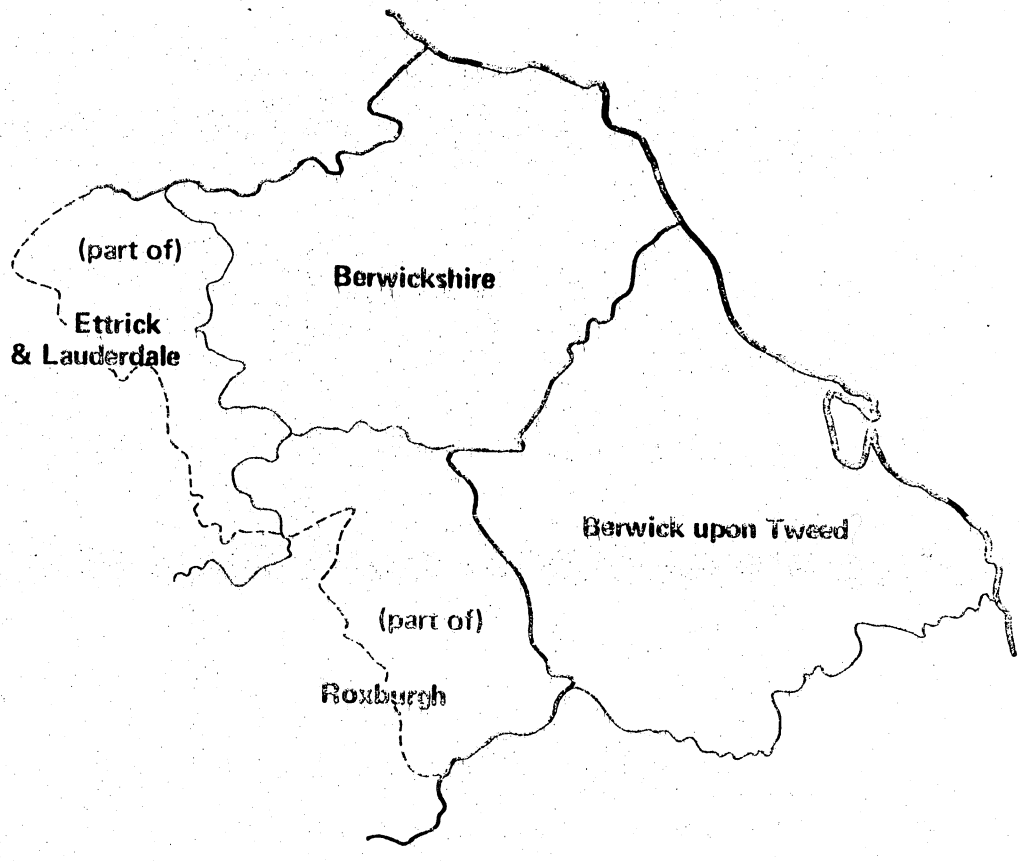

Figure A2 EASTERN BORDERS (POST–REORGANISATION)

Thus Kelso Small Burgh and Kelso District are no longer represented as separate local authorities. Similarly, part of the West District of Berwick County, including Lauder Small Burgh, are now included in Ettrick and Lauderdale District. Because of this, there are no recent statistics which apply to these areas. In Northumberland, the four separate local authorities have been amalgamated into Berwick upon Tweed Borough. Statistics relating to the individual areas are no longer compiled, although they are for the area as a whole.

Employment Exchange Areas

The area is largely divided between two Exchange Areas, Eyemouth and Berwick upon Tweed, and these are shown in Figure A3.

In Northumberland, the Berwick upon Tweed Employment Exchange area includes all of the old Berwick Metropolitan Borough, all of Noram and Islandshires Rural District, about three quarters of Glendale Rural District and one quarter of Belford Rural District. The remainder of these two Rural Districts falls into the Alnwick Employment Exchange Area. In Scotland the Eyemouth Employment Exchange Area covers the area of post-reorganisation Berwickshire District. The remainder of the old county of Berwick is in the Galashiels Employment Exchange Area. The Kelso Small Burgh and District fall within the Hawick Employment Exchange Area, although there is a sub-office at Kelso, for which some separate statistics are available. The area which this covers is similar to, but not exactly the same as, the Kelso Small Burgh and District area. The Jedburgh sub-office, with which some of the Kelso sub-office statistics were combined, was closed in 1973.

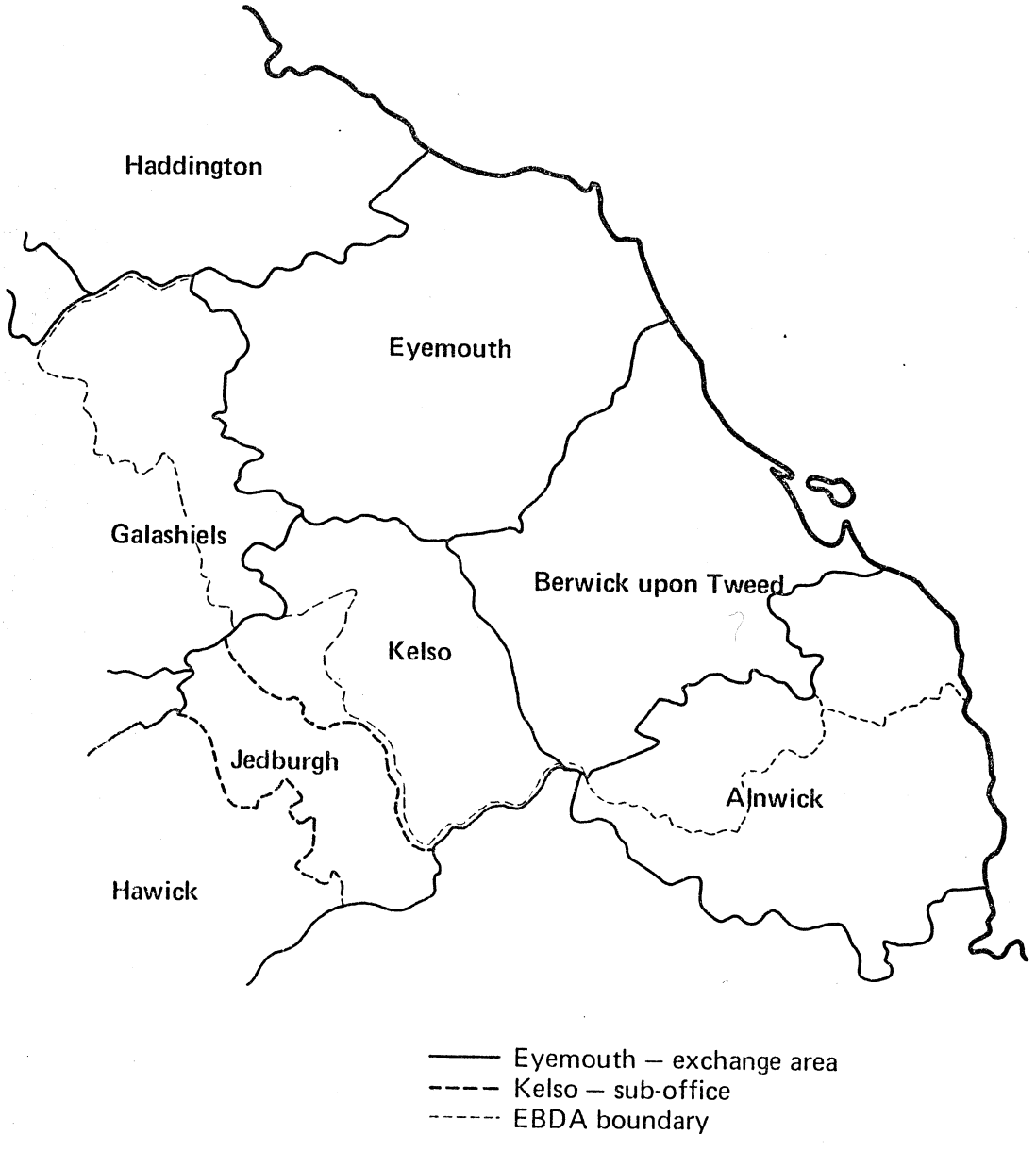

Figure A3 EMPLOYMENT EXCHANGE AREAS

APPENDIX 2

Demographic and Labour Market Data

TABLE A.2.1 - Population of larger settlements in Northumberland (within Rural Districts)

	1931	1951	1961	1971
Belford	684	891	1070	960
North Sunderland	1149	1580	1625	1725
Wooler	1505	1791	1976	1833

SOURCE : Population census

TABLE A.2.2 - Historical Populations of the Eastern Borders by Districts

	1801	1851	1901	1911	1931	1951	1961	1971
Berwickshire	30206	36297	30824	29643	26612	25068	22437	20779
Kelso	11592	14549	10661	10303	9015	8835	8139	8288
Berwick upon Tweed	10645	16008	13437	13075	12299	12554	12178	11647
Belford	4576	6871	5198	5006	4614	5140	5004	4611
Glendale	11513	14348	8770	8579	8054	7575	7031	6073
Noram and Islandshires	6097	8085	6054	5830	4918	4418	3867	3452
Total	74629	96158	74944	72436	65512	63590	58656	54850

SOURCE : Population census

TABLE A.2.3 - Population Change in The Eastern Borders by Residential Districts.

	1951[a]	1961[a]	1966[b]	1971[a]	1974[c]
Berwickshire County	25068	22437	22090	20779	21224
Small Burghs					
Coldstream	1295	1226	1270	1278	1429
Duns	2028	1837	1860	1768	1902
Eyemouth	2269	2161	2330	2530	2797
Lauder	623	597	590	604	637
Districts					
East	7157	6393	6350	5671	5732
Middle	6607	5600	5250	4737	4567
West	5089	4623	4440	4191	4160
Kelso Small Burgh	4119	3968	4320	4852	4957
Kelso District	4716	4171	4060	3436	3587
Berwick Met. Burgh	12554	12178	11390	11647	-
Berwick Borough	-	-	-	-	25900
Belford Rural District	5140	5004	5210	4611	-
Glendale Rural District	7575	7031	6700	6073	-
Noram & Islandshires Rural District	4418	3867	3670	3452	-
TOTAL	63590	58656	57440	54850	55668

a. 100 per cent census

b. 10 per cent census

c. Registrar General's estimate of home population

TABLE A.2.4 - Per Cent Age Distribution of Population, 1951-71

	1951				1961				1971			
	Males		Females		Males		Females		Males		Females	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
0 - 4	9.96	8.55	8.26	7.88	8.63	7.79	7.45	6.94	8.32	6.97	7.07	6.28
5 - 14	15.28	14.99	12.52	14.16	17.24	16.68	14.36	15.07	16.54	15.67	14.47	14.16
15 - 24	11.58	12.47	12.20	11.38	11.51	12.37	10.74	10.77	13.36	12.73	12.45	10.64
25 - 34	14.08	13.90	13.41	12.17	11.62	11.41	11.00	11.08	11.41	10.41	10.52	9.80
35 - 44	15.05	14.97	14.23	14.56	13.29	12.86	12.58	12.15	11.88	11.41	10.40	11.17
45 - 54	13.39	13.56	13.37	14.21	14.53	13.81	13.94	14.21	12.54	12.97	12.16	12.43
55 - 64	9.30	9.84	11.47	11.69	11.75	12.72	13.19	14.10	12.73	13.79	13.36	15.10
65 - 74	7.76	7.95	9.36	9.26	7.29	8.01	10.26	9.84	8.94	11.43	11.92	13.25
75 - 84	3.30	3.37	4.41	4.02	3.63	3.76	5.47	4.88	3.61	3.83	6.17	5.93
85 +	0.29	0.41	0.78	0.67	0.49	0.59	1.01	0.97	0.66	0.78	1.48	1.24
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

SOURCE : Estimated from Population Census 1951, 1961, 1971.

TABLE A.2.5 - Inter-Censal Cohort Change, 1951-71

	Male Urban		Male Rural		Female Urban		Female Rural	
	1951	1961	1951	1961	1951	1961	1951	1961
0 - 4	+1066	+1052	+1225	+943	+1064	+1029	+1131	+886
5 - 14	+879	+1025	+1087	+894	+847	+1043	+999	+867
15 - 24	-497	-441	-746	-900	-292	-239	-863	-954
25 - 34	-18	+20	-445	-536	-208	-2	-298	-372
35 - 44	-126	+66	-473	-250	-159	-58	-270	-231
45 - 54	-95	-56	-516	-267	-84	-26	-376	-227
55 - 64	-229	-185	-434	-306	-66	-47	-329	-187
65 - 74	-267	-322	-507	-454	-209	-148	-557	-429
75 - 84	-526	-444	-835	-741	-584	-567	-917	-767
85 +	-391	-425	-587	-577	-613	-710	-709	-778
TOTAL +	+1945	+2163	+2312	+1837	+1911	+2072	+2130	+1753
-	-2149	-1873	-4543	-4031	-2215	-1797	-4319	-3945
net	-204	+290	-2231	-2194	-304	+275	-2189	-2792

SOURCE : Population Census

TABLE A.2.6 – Migration Within the Eastern Borders (movements between Local Authorities, 5 years prior to 1971, 10 per cent sample)

FROM :	Coldstream	Duns S.B.	Eyemouth S.B.	Lauder S.B.	East Dist.	Middle Dist.	West Dist.	Kelso S.B.	Kelso Dist.	Berwick M.B.	Belford R.D.	Glendale R.D.	Noram and Islandshires R.D.	Total
Coldstream S.B.		–	–	–	–	1	–	3	1	–	–	–	–	5
Duns S.B.	1		–	–	5	2	–	–	3	2	–	–	1	14
Eyemouth S.B.	–	–		–	–	–	–	–	–	4	–	–	–	4
Lauder S.B.	–	–	–		–	–	1	–	–	–	–	–	–	1
East Dist.	–	2	–	–		13	–	1	3	12	–	1	2	34
Middle Dist.	–	13	–	–	6		4	7	1	6	–	1	11	49
West Dist.	–	–	–	14	–	5		5	4	–	–	–	2	30
Kelso S.B.	–	–	–	–	–	–	3		10	6	1	–	–	20
Kelso Dist.	–	–	–	–	1	3	7	19		–	–	6	–	36
Berwick M.B.	–	1	1	–	5	2	–	6	–		–	3	6	24
Belford R.D.	–	–	–	–	–	–	–	–	–	3		3	3	9
Glendale R.D.	2	–	–	–	–	–	2	3	–	8	13		9	37
Noram and Islandshires R.D.	3	–	3	–	–	4	–	8	–	11	9	12		50
TOTAL	6	16	4	14	17	30	17	52	22	52	23	26	34	313

SOURCE : Population Census, 1971, Migration Tables.

TABLE A.2.7 - Registrar General's Mid-Year Population Estimates

	1971	1972	1973	1974
Coldstream	1,297	1,350	1,393	1,429
Duns	1,773	1,757	1,812	1,902
Eyemouth	2,564	2,625	2,704	2,797
Lauder	618	643	639	637
East District	5,585	5,502	5,675	5,732
Middle District	4,658	4,568	4,550	4,567
West District	4,146	4,106	4,138	4,160
Kelso Burgh	4,855	4,922	4,934	4,957
Kelso District	3,417	3,398	3,412	3,587
Berwick M.B.	11,650	11,760	11,610	(11,687)
Belford R.D.	4,590	4,600	4,710	25,900*
Glendale R.D.	6,180	6,070	5,860	
Noram & Islandshires R.D.	3,490	3,470	3,620	(14,213)
Total "Urban"	22,757	23,057	23,092	23,409
Total "Rural"	32,066	31,714	31,965	32,259
Grand Total	54,823	54,771	55,057	55,668

SOURCE : Registrar General's Annual Reports.

* The total for Berwick M.B. in 1974 was aggregated with Belford, Glendale and Noram & Islandshires. The totals in parenthesis have been estimated using the proportions of the previous three years.

TABLE A.2.8 - Annual Natural Change and Net Migration 1971-74

	(1) Initial Population	(2) Births	(3) Deaths	(4) Terminal Population	(4)+(3) -(2)-(1) Net Migration
URBAN					
1971-2	22,757	443	355	23,057	+212
1972-3	23,057	346	366	23,092	+55
1973-4	23,092	291	363	23,409	+389
RURAL					
1971-2	32,066	400	459	31,714	-293
1972-3	31,714	343	504	31,965	+412
1973-4	31,965	345	438	32,259	+387
TOTAL					
1971-2	54,823	843	814	54,771	-81
1972-3	54,771	689	870	55,057	+467
1973-4	55,057	636	801	55,668	+776

TABLE A.2.9 - Employment in the Eastern Borders

	1961	%	1966	%	1971	%	1975[o]	%
PRIMARY								
Berwick	2268	29.2	1691	21.7	1215	16.1	0.9	12
Eyemouth	2368	46.0	1912	36.2	1676	33.7	1.2	26
Kelso & Jedburgh*	1891	35.2	1701	33.0	1051	20.4	0.9	25
Total	6527	34.6	5304	29.1	3942	22.3	3.0	19
MANUFACTURING								
Berwick	1047	13.5	1411	18.1	1946	25.7	2.0	26
Eyemouth	749	13.1	854	16.2	673	13.5	0.9	20
Kelso & Jedburgh*	964	18.0	1065	20.7	1407	27.4	0.9	25
Total	2760	14.6	3330	18.3	4026	22.7	3.8	24
CONSTRUCTION								
Berwick	567	7.3	596	7.7	574	7.6	0.6	8
Eyemouth	474	8.3	576	10.9	639	12.8	0.6	13
Kelso & Jedburgh*	469	8.7	400	7.8	434	8.4	0.3	8
Total	1510	8.0	1572	8.6	1647	9.3	1.5	9
DISTRIBUTIVE TRADES								
Berwick	1089	14.0	1134	14.6	1045	13.8	1.0	13
Eyemouth	467	8.2	417	7.9	395	7.9	0.4	9
Kelso & Jedburgh*	565	10.5	549	10.7	773	15.0	0.4	11
Total	2121	11.2	2100	11.5	2213	12.5	1.8	11
MISCELLANEOUS SERVICES								
Berwick	2471	31.8	2550	32.8	2470	32.6	2.8	36
Eyemouth	1363	23.8	1287	24.4	1315	26.4	1.2	26
Kelso & Jedburgh*	1269	23.6	1297	25.2	1288	25.0	1.0	28
Total	5103	27.0	5134	28.2	5073	28.6	5.0	31
PUBLIC ADMINISTRATION								
Berwick	335	4.3	360	4.6	322	4.2	0.5	6
Eyemouth	311	5.4	213	4.0	192	3.9	0.3	7
Kelso & Jedburgh*	209	3.9	123	2.4	140	2.7	0.1	3
Total	855	4.5	696	3.8	654	3.7	0.9	6
GRAND TOTAL[a]								
Berwick	7777		7782		7585		7.8	
Eyemouth	5732		5285		4979		4.6	
Kelso & Jedburgh*	5370		5153		5144		3.6	
TOTAL	18879		18220		17708		16.0	

SOURCES : Department of Employment, Edinburgh and Newcastle

NOTES : * For 1961, 1966 and 1971 figures are available only for the Kelso and Jedburgh Employment Offices together. In 1975 the total refers to the Kelso Sub Office alone (Kelso appears to represent some 70 per cent of the combined total).

o Since 1972 the end of the use of National Insurance cards has meant that detailed employment statistics are no longer available. Statistics are now collected on the basis of an annual survey conducted by the Department of Employment.
Prior to 1972 statistics include those unemployed, allocated to industries on the basis of their National Insurance cards.
After this date, unemployed are excluded from these totals.

a These totals include those not classified by industry, so the columns do not necessarily add to this total.

Standard Industrial Classification Groupings in Table A.2.9

	1958 SIC Groups	1968 SIC Groups
Primary	I & II	I & II
Manufacturing	III - XVI	III-XIX
Construction	XVII	XX
Distributive Trades	XX	XXIII
Public Administration	XXIV	XXVII
Miscellaneous Services	XVII, XIX, XXI-XXIII	XXI, XXII, XXIV-XXVI

TABLE A.2.10 – Wholly Unemployed in the Eastern Borders, by Exchange Districts (at June each year)

	Berwick E. Exchange				Eyemouth E. Exchange				Kelso & Jedburgh E.Exchanges			
	Numbers		Rates		Numbers		Rates		Numbers		Rates	
	M	F	M	F	M	F	M	F	M	F	M	F
1961	131	11	2.5	0.4	63	26	1.6	1.5	71	14	1.9	0.9
1962	165	27	3.2	0.9	58	25	1.4	1.4	58	16	1.6	0.9
1963	178	22	3.3	0.7	74	20	1.8	1.1	72	17	2.0	1.0
1964	123	16	2.3	0.6	64	32	1.7	1.9	53	15	1.6	0.9
1965	165	28	3.3	1.0	76	32	2.1	1.9	51	16	1.5	0.9
1966	182	27	3.8	0.9	66	19	1.9	1.0	42	15	1.2	0.9
1967	151	41	3.1	1.4	88	63	2.7	3.7	43	19	1.3	1.1
1968	187	34	3.8	1.2	115	35	3.5	2.4	64	24	1.9	1.4
1969	231	22	4.8	0.7	119	19	4.1	1.3	75	20	2.4	1.1
1970	255	25	5.3	0.8	161	46	4.8	3.0	88	21	3.1	1.2
1971	228	27	4.8	0.9	182	46	5.5	2.7	138	34	4.2/4.9	1.8/2.0
1972*	234	24	5.3	0.9	152	63	4.8	4.3	121	21	4.2	1.2
1973*	124	13	2.7	0.4	100	42	3.0	2.7	55	22	1.8	1.2
1974*	110	30	2.4**	1.0**	122	45	3.8	2.9	74	11	3.4	0.8
1975*	202	52	4.3	1.7	156	44	4.8	2.7	66	10	3.0	0.8

SOURCE : Department of Employment, Edinburgh and Newcastle.

* As only crude estimates of the total numbers of employees are available after 1971, these estimates of unemployment rates will be less accurate.

** Estimated.

APPENDIX 3

TABLE A.3.1 - Timetable of Factory Construction (factories occupied at May 1977)

		Date of Authorisation	Date Land Acquired	Date of start of Construction	Date of end of Construction	Date of 1st Occupation	Date of 2nd Occupation
Berwick	AF1	9.66	6.67	6.67	3.68	6.70	
	AF1(a)	3.70	-	3.71	10.71	10.71	1.76
	AF2	6.68	3.70	11.70	7.71	9.72	
	AF3	1.71	7.72	6.73	1.74	7.74	
Eyemouth	AF1	10.69	10.69	4.70	1.71	6.72	
	AF2	1.74	10.69	5.74	2.75	2.75	12.75
Duns	AF1	12.70	11.70	1.71	6.71	1.72	
	AF2	10.72	11.70	1.73	6.73	9.73	2.75
	AF3	12.75	3.73	2.76	10.76	1.77	
Coldstream	AF1	7.73	4.72	9.73	3.74	8.75	
Kelso	AF1	4.67	n.a.	12.67	8.68	9.68	
	AF2	8.71	n.a.	10.71	6.72	12.74	

SOURCE : English Industrial Estates Corporation, Scottish Development Agency

APPENDIX 4

Further Analysis of Workers Survey

In Chapter 4 the data obtained from a survey of factory employees carried out in 1977 was presented. In that chapter the data was confined to what was necessary in order to assess the direct and indirect effect of the factory programme on population in the Eastern Borders. In this section we present further detailed analysis from that survey, partly because the information is of interest in its own right and partly because it is needed in order to assess the opportunity cost of labour when we come to re-estimate the costs of the factory programme in resource terms.

The particular aim of this section is to attempt to shed light on the economic motivation of those who have changed employment in the Eastern Borders in response to the factory programme. Two types of information are available. First the respondents to the survey were asked what was their previous employment situation and by how much their take-home pay changed as a result of moving to the factories. The respondents were also asked to estimate what their employment situation would have been had the factory programme not existed. These two types of information, one relating to the 'before and after' situation of workers and the other relating to the 'with and without' situation are analysed in this section in that order.

In Tables A.4.1 and A.4.2 the data for the distribution of previous employment of full-time male and female factory employees are cross-tabulated against the change in the take-home pay which workers achieved as a result of moving jobs. The various types of employment situation listed along the top represent an exhaustive list of all of the possible previous employment situations, ranging from school through various types of unemployment to a number of more or less precise forms of industrial employment and the 'other' category

comprises a very small number of individuals who did not belong to a significant industrial group. The range of changes in take-home pay (which are measured in 1976 prices) is quite wide. In fact something like one third of male and female employees experienced a drop in take-home pay as a result of the move to factory employment. It should however be noted that two of the quite numerous groups reporting a fall in income were employees who had come to the factories direct from school. This somewhat unlikely seeming result serves to undermine the confidence in the survey results which are based on a rather simple postal questionnaire. As has been noted earlier it may therefore contain some inaccurate results and this particular one may be a case in point. From Table A.4.1 it also appears that one third of those coming from registered unemployment also experienced a substantial drop in take-home pay. This result may also seem unlikely and suggests that the questionnaire could have been misunderstood. However it is not unlikely that a number of workers will have lost income as a result of moving to factory employment. This is a well-known phenomenon in the labour market and may be explained in a number of ways. For example it is quite possible that workers move employment in order to be able to live in a more favourable location, perhaps from the point of view of schooling, proximity to relatives, sporting facilities and so on; it may be that their drop in cash income is more than compensated by an increase in the perquisites they receive from their new employment, such as housing; it is also possible that their move has been motivated by their expectations of being dismissed by their previous employer, in which case they may have been quite willing to accept a lower income.

Examination of the total columns in Tables A.4.1 and A.4.2 shows that roughly half of all men moving to the factories experienced a fall in income and the other half managed to achieve an increase. Women apparently did slightly better in that rather more than half of them managed to increase their income on moving to factory employment.

TABLE A.4.1 - Distribution of Full-time Male Factory Employees by Change in Income and Previous Employment Situation

Change in take-home pay per week	School	Registered unemployment	Unregistered unemployment	Present company	Farm work	Fishing	Factory work	Services	Building construction	Other	Total
Less than 3.5	5	7	0	1	3	1	9	8	4	1	39
-3.5 to -1.5	0	1	0	0	0	0	3	1	1	0	6
-1.5 to -0.5	0	0	0	0	0	0	1	0	0	0	1
-0.5 to -10.0	1	2	0	4	1	0	6	1	0	1	16
0.5 to 1.5	0	1	1	0	0	0	0	0	0	0	2
1.5 to 3.5	1	4	0	0	0	0	4	3	0	0	12
3.5 to 5.5	0	0	0	0	0	0	7	1	0	0	8
5.5 to 10.5	3	3	0	1	0	0	8	1	0	2	18
10.5 and more	11	2	1	1	0	1	5	6	1	1	29
Total	21	20	2	7	4	2	43	21	6	5	131

TABLE A.4.2 – Distribution of Full-time Female Factory Employees by Change in Income and Previous Employment Situation

Change in take-home pay per week	School	Registered unemployment	Unregistered unemployment	Present company	Farm Work	Fishing	Factory	Services	Building construction	Other	Total
Less than -3.5	10	2	2	1	0	0	10	7	0	0	32
-3.5 to 1.5	0	0	0	1	0	0	2	1	0	0	4
-1.5 to -0.5	0	0	0	0	0	0	1	0	0	0	1
-0.5 to -10.5	0	1	0	1	0	0	1	3	0	0	6
0.5 to 1.5	0	0	1	0	0	0	0	0	0	0	1
1.5 to 3.5	0	0	2	0	0	1	3	3	1	0	10
3.5 to 5.5	2	2	0	0	0	2	3	2	0	0	11
5.5 to 10.5	2	0	1	0	0	0	1	3	0	0	7
10.5 and more	2	4	3	0	0	1	1	8	0	0	19
Total	16	9	9	3	0	4	22	27	1	0	91

In Table A.4.3 the cross-tabulations of Tables A.4.1 and A.4.2 are summarised in terms of the mean change in take-home pay obtained by men and women moving from various employment situations to the Development Commission factories. This table shows that the largest change in fortune was enjoyed by male school leavers and they were closely followed by women taking up employment from a situation of unregistered unemployment. The other types of income change which are particularly important are amongst men moving from factory work, who account for nearly one third of the total men in Table A.4.1 and females moving from employment in services who are nearly as significant in Table A.4.2. The men moving from other factories obtained an increase in the region of £100 per annum whereas the women obtained nearly £200 per annum by moving from service industries to full-time employment. This latter comparison should perhaps be made with caution as the service employment from which they moved may have only been part-time.

TABLE A.4.3 – Mean Change in Take-home Pay by Selected Previous and alternate situations.

Situation	Full-time Males	Full-time Females
	£ per annum	
Previously		
At school	691	373
Registered unemployed	107	473
Unregistered unemployed	342	553
Outside Eastern Borders	176	-56
Alternately		
Would have left Eastern Borders	234	88

As noted in Chapter 4 a very significant proportion of women in the factories are employed on a part-time basis. The 26 part-time females who indicated the change in salary and their previous employment situation have also been examined. Half of these women were previously in the unregistered unemployed category and most of the rest were either employed in factories or in the service sector. Women moving from unregistered unemployment and from services

generally obtained a substantial increase in take-home pay. Smaller increases were obtained by those coming from factory employment. There were no part-time male employees identified in the survey.

In Tables A.4.4 and A.4.5 are the worker's own estimates of where they would have been employed in the absence of the factories by the change in income they obtained as a result of moving to their present employment. This information, which corresponds with that in Table 4.6, is relevant in attempting to assess the social opportunity cost of labour. In particular it sheds light on the premium that workers obtained by moving to the factories, which was sufficient to deter them from moving to the alternative situation, which presumably was open to them even with the existence of the job to which they actually moved. Thus although, as pointed out in Chapter 4, the total numbers moving to the various situations which workers imagined would have been open to them in the absence of factories, were unlikely to be realised; nevertheless the average change in earnings of the different groups does provide an indication of the strength of economic motivation to move into factory employment rather than seeking the alternative. In particular the men and women who claimed that they would have left the Eastern Borders, in the absence of the factory programme, obtained an increase in annual earnings of £234 and £88 respectively. Assuming their assessment of their own potential mobility is reasonably accurate this suggests that a larger economic inducement than these would have been needed to persuade them to leave the region with the factory programme in existence.

TABLE A.4.4 - Change in Take-home Pay of Full-time Males by Perceived Alternative Employment Situation

Alternative situation	Old job	Unemployment	Left E.B.	Other E.B. job	Retired	Total
Change in take-home pay: £						
less than -3.5	8	3	6	20	2	39
-3.5 - -1.5	2	1	0	3	0	6
-1.5 - -0.5	1	0	0	0	0	1
-0.5 - +0.5	7	2	2	5	0	16
0.5 - 1.5	0	1	0	1	0	2
1.5 - 3.5	4	1	1	4	0	10
3.5 - 5.5	2	0	2	4	0	8
5.5 -10.5	4	0	4	9	0	17
10.5 and more	9	1	5	13	0	28
Total	37	9	20	59	2	127

TABLE A.4.5 - Change in Take-home Pay of Full-time Females by Perceived Alternative Employment Situation.

Alternative situation	Old job	Unemployment	Left E.B.	Other E.B. job	Retired	Total
Change in take-home pay: £						
less than -3.5	6	2	5	14	3	30
-3.5 - -1.5	3	0	0	1	0	4
-1.5 - -0.5	1	0	0	0	0	1
-0.5 - +0.5	4	2	0	0	0	6
0.5 - 1.5	1	0	0	0	0	1
1.5 - 3.5	4	0	1	4	0	9
3.5 - 5.5	2	1	0	8	0	11
5.5 -10.5	3	0	0	4	0	7
10.5 and more	3	3	1	11	0	18
Total	27	8	7	42	3	87

Table A.4.6 summarises the changes in annual take-home pay by perceived alternative employment situations. The major increase obtained by women who would otherwise have been unemployed is presumably attributable to the importance of unregistered unemployment amongst women.

TABLE A.4.6 – Estimated Mean Annual Change in Take-home Pay by Perceived Alternative Employment Situation.

Alternative employment	Male full-time	Female full-time
	£	£
Old job	210	127
Unemployment	2	493
Left Eastern Borders	235	87
Other E.B. job	239	284

In Table A.4.7 we see that nearly half of the workers who thought that they would alternately have stayed in their old job were previously employed in factories, and half of the remainder came from service employment. The majority of those who were previously in registered employment thought that they would alternately have been unemployed. Half of those who would have left the Eastern Borders had it not been for factories were previously in factory employment. Those who would have found some other employment within the Eastern Borders were distributed across several categories, one quarter of them had come straight from school, one sixth from unemployment, one fifth from other factories and one sixth from services. For full-time females, shown in Table A.4.8, those who would have stayed in their previous job had moved predominently either from factory or service employment, as with men. The small number who would alternately have been unemployed were dominated by registered unemployed females. The large category who would have found other employment within the Eastern Borders came from school, from services and to a lesser extent from other factory employment. The part-time females, in Table A.4.9, exhibit a pattern which is not notably dissimilar from that of full-time females.

Assessment

It should be emphasised that this was a postal survey and that the results do reflect some of the difficulties attendant on such surveys. The response rate was reasonably high at 40 per cent, as noted in Chapter 4. The majority of questionnaires seemed to have been filled in correctly although some puzzles do seem to emerge from the data. In particular a checking routine was built into the questionnaire in that question 8 asked workers first to indicate whether or not they were financially better off as a result of taking factory employment and they were then asked to indicate by how much their take-home pay had changed as a result of the employment. Three workers in fact indicated that they were financially better off but their take-home pay had decreased; similarly eight workers said that they were worse off as a result of the move whilst their take-home pay had increased.

These results do raise questions as to the reliability of the data on the financial improvement of worker's situations as a result of moving to the factories. However the matter is not clear-cut as the two situations indicated in the question are not necessarily mutually exclusive, that is it is possible for someone to be financially better off although having taken a cut in wages due to say having moved to a substantially cheaper house or having avoided substantial travel expenses. For these reasons it has been decided to take the results of the survey at face value rather than pursuing the alternative course of rejecting the observations for which such results were obtained. It is likely that the latter course would not have very much affected the results anyway and it therefore seems desirable to make full use of the observations obtained. The data have been presented here in reasonable detail in order to indicate the type of information that can be obtained from a comparatively simple questionnaire survey such as this.

TABLE A.4.7 - Full-time Male Employees : Previous Employment by Perceived Alternative Situation

Alternative situation without factories	Previous Employment Situation										
	School	Registered unemployment	Unregistered unemployment	Present company	Farm Work	Fishing	Factory	Building construction	Services	Other	Total
1. Old job	1	1	0	4	1	1	18	1	8	2	37
2. Unemployed	1	5	0	0	0	0	2	0	1	0	9
3. Left E.B.	3	3	1	1	0	0	10	2	0	0	20
4. Other E.B. job	15	9	1	2	3	1	12	3	10	3	59
5. Retired	0	1	0	0	0	0	0	0	1	0	2
6. Total	20	19	2	7	4	2	42	6	20	5	127

TABLE A.4.8 - Full-time Female Employees : Previous Employment by Perceived Alternative Situation

Alternative situation without factories	Previous Employment Situation										
	School	Registered unemployment	Unregistered unemployment	Present company	Farm work	Fishing	Factory	Building construction	Services	Other	Total
1. Old Job	0	0	2	2	0	0	15	1	7	0	27
2. Unemployed	1	4	2	0	0	0	0	0	1	0	8
3. Left E.B.	3	1	0	0	0	1	1	0	1	0	7
4. Other E.B.job	9	3	5	1	0	3	6	0	14	0	41
5. Retired	1	1	0	0	0	0	0	0	1	0	3
6. TOTAL	14	9	9	3	0	4	22	1	24	0	86

TABLE A.4.9 - Part-time Female Employees : Previous Employment by Perceived Alternative Situation

Alternative situation without factories	Previous Employment Situation										
	School	Registered unemployment	Unregistered unemployment	Present Company	Farm work	Fishing	Factory	Building construction	Services	Other	Total
1. Old job	0	0	0	0	0	0	3	0	2	0	5
2. Unemployed	0	0	4	0	0	0	1	1	2	0	8
3. Left E.B.	0	0	1	0	0	0	0	0	0	0	1
4. Other E.B. job	0	0	7	1	0	0	1	0	2	0	11
5. Retired	0	0	0	0	0	0	0	0	0	0	0
6. Total	0	0	12	1	0	0	5	1	6	0	25

APPENDIX 5

The Estimation of a Local Multiplier and Secondary Employment Creation

The multiplier effects of the factory programme have been estimated using a neo-Keynesian multiplier of the form:

$$k_r = \frac{1}{1-c(1-td-u)\ (1-m)}$$

where k_r = regional multiplier

c = marginal propensity to consume

td = marginal rate of direct tax

u = decline in transfer payments

m = marginal propensity to import

(1-m) represents the local value-added of consumption expenditure which may also be expressed to include ti (the indirect tax rate) i.e. as (1-m-ti).

In making estimates of the coefficients of the multiplier, it appears to be necessary to make two possible assumptions, either concerning the characteristics of the population who are affected by its various rounds or, if this is not felt to be possible, concerning the general characteristics of the population living in the region. Inevtiably the real level of these coefficients will depend upon the individual circumstances of members of the population, so that at best, any estimate must be an average figure.

Estimating the Coefficients

c - The average propensity to consume may be estimated from the Family Expenditure Survey (Department of Employment, 1976), for which data are supplied on a regional basis, although data specific to the Eastern Borders are not available. This shows that 6.1 per cent of income is saved. It is likely that the marginal rate would be somewhat higher than this. In fact most estimates of the marginal

propensity to consume appear to be between 0.85 and 0.9 and none above 0.9. In this case 0.9 will be used.

td - For a married couple with two children aged 4 and 6 with gross earnings of between about £55 and £90 per week in 1976, one extra pound earned would represent an increase in take-home pay of £0.60. (Central Statistical Office, 1976). Thus the marginal rate of taxation would be 0.4. However, 36.2 per cent of those taking up employment in the factories had not rpeviously been earning. For this group, the average rate of tax would be a more appropriate measure of tax rate. The average amount of tax paid, as shown in the Family Expenditure Survey is 8.3 per cent. Therefore, td is calculated as

$$(0.362 \times 0.18) + (0.638 \times 0.4)$$
$$= 0.32$$

u - A decline in transfer payments to a region arises very largely because of the reduced number of people who are eligible to draw unemployment benefit as employment levels increase. This is estimated partly from published data and partly from our survey of factory employees. The percentage of net income represented by social security payments to unemployed men in November 1975 is shown in Social Trends (Central Statistical Office, 1976). This gives a figure of 72 per cent of married men with two children and previously average earnings. The survey of employees indicated that 11.7 per cent of those taking up jobs in the factories had previously been registered as unemployed. These were mostly men.

Thus $u = 0.117 \times 0.72 = 0.08$

m - The marginal propensity to import has an important influence on the value of the multiplier. It is estimated from the pattern of consumer expenditure and from the element of each type of expenditure which contributes to incomes locally.

The patterns of consumer expenditure are provided by the Family Expenditure Survey both by planning regions and by type of administrative area. Data is therefore available for the Northern Region and for Scotland. However, as much of the Eastern Borders is rural with only relatively small towns, it is possible that expenditure patterns might be more closely matched by averages of all rural areas than they are by averages of all of the Northern Region or Scotland. One possible compromise is to average the patterns given for the Northern Region, Scotland and the low density (less than 3.2 persons/acre) non-metropolitan areas (80 per cent of the 1971 population in the Eastern Borders fell into this category). Thus this pattern of expenditure would not exactly match any actual patterns, but would constitute an amalgam of the influences at work in the Eastern Borders.

The averages shown have not been weighted on the basis of the numbers of households within each grouping as this would not necessarily bring the result any closer to the actual pattern of expenditure in the Eastern Borders which, of course, is unknown.

One further adjustment was made to the expenditure pattern. Recent figures, published from the Census of Distribution (Department of Industry, 1977) show the amount of receipts from sales of goods by mail order businesses. It seems likely that in the more remote, rural areas, where access to large shopping centres is restricted, that a significant proportion of consumer purchases could be made by mail order. However, information on the use of mail order in rural as opposed to urban areas is not available. The expenditure pattern, as shown in the Family Expenditure Survey was adjusted on the basis of the average figures calculated from the Census of Distribution by commodity type. This seems likely to underestimate the use of mail order and so will produce some measure of upward bias on the final multiplier.

Another possible source of upward bias is that some consumer expenditure will be made outside the Eastern Borders. As the area contains no large shopping centre, it seems likely that people will

in fact travel to Newcastle and Edinburgh in order to purchase high value goods. It has not been possible to make any allowance for this in the calculation of local value-added as the extent of expenditure outside the region is not known.

The local value-added component of expenditure may be estimated in a number of ways. Archibald (1967) has taken the labour costs associated with the provision of services and retailing as a minimum estimate of value-added locally, except in the case of co-operative societies and other retailing organisations with 1-9 establishments, where he has taken the gross margin. This is defined (Department of Industry, 1976) as the difference between turnover and purchases (including any purchase tax paid less stocks at the beginning of the year plus stocks at the end of the year. The gross margin includes any receipts for services and any productive activity, such as baking, included in a return.

However, it is difficult to relate establishment type to the expenditure patterns given in the Family Expenditure Survey. It appears that in the Eastern Borders, there are few large multiples or chain stores, which would send profits or incur administrative expenses outside the region. Much of local expenditure seems likely to pass through smaller independent outlets, the majority of whose expenses and profit other than the cost of purchasing goods for retailing, would be incurred locally, so that the gross margin would represent local value-added more closely than simply the labour costs. Details of the gross margin of various types of retail outlet are available in the 1971 Census of Distribution. There are no general statistics more recent than these.

Simply taking gross margins in retailing as a percentage of turnover will over-estimate local value-added as this will include National Insurance contributions paid in respect of staff employed in retail outlets, which will have no local value-added component. National Insurance contributions were paid by employers at a rate of 8½ per cent of wages. Thus this would represent about 7.8 per cent

of employers expenditure on wages. For certain types of retailing, information is available on both gross margins as a percentage of turnover and on total labour costs as a percentage of turnover. (National Board for Prices and Incomes, 1971). In these examples, for the independent and co-operative establishments, labour costs appear to represent about 50 per cent of the total gross margin. Thus Employers National Insurance contributions would represent about 4 per cent of the total gross margin. As this information is not available for individual types of retail outlet, it is assumed that this figure will be constant and so each estimate of gross margin has been reduced by 4 per cent in order to allow for National Insurance contributions.

The services which are provided in the region, such as the provision of gas and electricity are largely administered from outside the region, so that expenditure on these is likely to only have a low local value-added. Estimates of local value-added in electricity supply and post and telecommunications were made on the basis of the annual reports and accounts of the relevant public authorities on the basis of the labour costs involved in supply and servicing. Where this was not possible, estimates previously made by Archibald (1967) and Greig (1971) have been used. On this basis it is estimated that 32 per cent of expenditure is local value-added.

TABLE A.5.1 - Local Value-added of Personal Expenditure

	Average Expenditure North, Scotland & Low Density	Adjusted for Mail Order Purchases	LVA* factor	Local Content of Expenditure
	£	£		£
Housing	5.89	5.89	0.96	5.66
Fuel light and power	2.91	2.91	0.14	0.42
Food	12.78	12.78	0.27	3.41
Alcoholic Drink	2.71	2.68	0.16	0.38
Tobacco	2.02	2.02	0.19	0.38
Clothing and footwear	4.60	4.16	0.33	1.37
Durable and household goods	3.88	3.61	0.31	1.12
Other goods	3.68	3.51	0.29	1.03
Transport and Vehicles	6.60	6.60	0.21	1.40
Services	5.02	5.02	0.33	1.90
Miscellaneous	0.27	0.27	0.20	0.05
Mortgage payments etc.	2.64	2.64	-	-

* These have been aggregated from the individual categories for which they were calculated.

$$(1-m) = \frac{17.17}{53.00} = 0.32$$

Having now estimated the various coefficients of the multiplier, it is possible to estimate its value.

$c = 0.9$
$td = 0.32$
$u = 0.08$
$m = 0.68$

$$kr = \frac{1}{1-0.9\ (1-0.32-0.08)\ (1-0.68)}$$

$$= 1.21$$

This result may be compared with other estimates which have been made of regional multipliers in small regions.

TABLE A.5.2 - Estimates of Regional Multipliers in Previous Studies.

Mid-Wales	1.25	(Development Commission, 1972)
Small Development Area (e.g. Cornwall and North Devon)	1.24	(Brown et al., 1967)
Wales	1.33	
North of England	1.37	(Steele, 1969)
Yorkshire & Humberside	1.19	
East Anglia	1.22	
Highlands of Scotland:		
upper	1.54*	
lower	1.44*	(Greig, 1972)
Isle of Skye	1.13	(Brownrigg & Greig, 1974)

* A slightly different model has been applied in the calculation of these figures to allow for the high level of immigration in the project being studied.

This result is consistent with these other estimates. It is to be expected that such a small region would have a small multiplier. Indeed, it seems likely that it would be even smaller but for the absence of large retailing chains in the area.

The Multiplicand

A further problem lies in deciding what multiplicand should be correctly expanded by the multiplier. Wilson (1968) has pointed out that injections may be subject to leakages before undergoing multiplier expansion. For instance, in the case of factory construction, some of this expenditure such as the purchase of materials outside the region, may have no effect on local income.

Any particular project is likely to cause a number of different potential sources of local income generation. Brownrigg (1974) has proposed a generalised formulation of the multiplier model as

$$\Delta Y_r = k_r (J_1 + J_2 + \ldots\ldots + J_n)$$

where each of the multiplicand components ($J_1 \ldots\ldots J_n$) is stated net of immediate injection leakages from the region.

In the case of employment creation through the provision of factories there appear to be three main sources of income:

J_1 = Factory Construction Expenditure
J_2 = Wages and salaries of those employed in the factories
J_3 = Purchase of factory inputs.

The size of these injections has been considered in the main text.

Estimating the Secondary Employment Generated

Secondary employment generation occurs in three main sectors: in the construction of the factories, in the provision of public and consumer services and in the provision of factory inputs. A simple approach to estimating the numbers employed in these sectors lies in (i) estimating the proportion of male and female workers in each of these two groups and (ii) estimating their average earnings. It is then possible to calculate how many workers could be employed by this income in each sector. This was the approach used in a study of Mid-Wales (Development Commission, 1972).

However this approach omits two points. Firstly, it is unlikely that all this income will result from the payment of labour; part of it will be paid for the provision of other factors. It is possible to estimate that part of income resulting from employment on the basis of the national distribution of factor incomes. Secondly, the method assumes that there is no surplus capacity in the services sector. This also seems to be unlikely in a region experiencing a high level of emigration, especially when most of the job reductions are occurring in the basic sector. It could be proposed that these employees would otherwise have emigrated so that they do represent

employment maintained in the area. However, it seems likely that emigration does lead to surplus capacity in the services sector, at least in the short and medium term, due to labour immobility.

One further point is relevant to a situation where demand for services increases. This is that extra expenditure, coupled with labour mobility could lead to higher incomes rather than a higher level of employment.

If the increase in income which can provide secondary employment $= \Delta Y - \Delta J$

and total employment created $= \Delta E$

$$\Delta E = \Delta E_a + \Delta E_{SS} + \Delta E_P$$

where ΔE_a = primary employment created

ΔE_{SS} = total secondary employment created in the services sector

ΔE_P = increase in employment in Public Administration

it is assumed that :

$$\Delta E_P = P_a \Delta E$$

P_a = proportion of employees in Public Administration

$$\Delta E_{SS} = \frac{d(\Delta Y - \Delta J)}{(P_M C_{SM} + P_F C_{SF})} \times (1 - S)$$

where d = proportion of factor incomes accruing to labour

P_M = proportion of services sector which is male employment

P_F = proportion of services sector which is female employment

C_S = cost of employing one person in services sector (C_{SM} of males and C_{SF} of females)

S = proportion of surplus capacity in services sector.

if the regional employment multiplier $= k_e$

$$k_e = \frac{\Delta E}{\Delta E_a}$$

Estimating the Coefficients

d - This may be calculated from national data on the basis that factor incomes are distributed in the same way between industries and regions. On the basis of the distribution of personal incomes in 1975, excluding National Insurance benefits and other current grants from public authorities, 10.0 per cent of income resulted from rents, dividends and net interest (Central Statistical Office, 1976). Thus d may be taken as 0.9.

P_M and P_F - These may be estimated from the proportions employed in the services sector in the relevant employment exchange areas. In 1975 in the Berwick, Eyemouth and Kelso Employment Exchange areas, 45 per cent of employment in the relevant service sectors was male and 55 per cent female.

P_a - In 1975, in the same areas, 6.5 per cent of the workforce was in public administration and 75 per cent of these jobs were for males.

C_{SM} and C_{SF} - The Department of Employment (1977) has given average gross annual earnings in services as £3480 for men and £2186 for women. These are adjusted for other costs of employment paid by employers, such as National Insurance in order to estimate total costs of employment. It is assumed that wages in the Eastern Borders will be equivalent to national averages.

S - The value of S is not known. The estimates of employment numbers have been calculated on the assumption that it is zero. However, this could be a significant factor influencing the level of employment resulting from the factories.

(i) Employment in the Provision of Factory Purchases

$$= \frac{0.9\ (169700)}{(0.5 \times 3480) + (0.5 \times 2186)}$$

= 54 employees (27 males and 27 females)

(ii) Employment in the Construction and Site Development

$$= \frac{54875}{3754}$$

= 15 males

(iii) Employment in the Services Sector

$$= \frac{0.9\ (317000)}{(0.45 \times 3480) + (0.55 \times 2186)}$$

= 103 employees (46 males and 57 females)

(iv) Employment in Public Administration

= 0.065 x 960

= 62 (47 males and 15 females)

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APPENDIX 6

Annual Flows of Exchequer Costs and Returns

Between the first and second interim reports adjustments were made to the revenue side of the account to allow for:

- new DHSS estimates of unemployment benefit
- indirect taxes and subsidies
- revised employment levels, below those used in the previous report (see Chapter 11).

The exchequer costs estimated in the first report were not changed and the cash flows discounted over various time horizons are therefore tabulated as follows:

TABLE A.6.1 – Estimated Annual Exchequer Cash Flows in 1976 Prices

Year	Total Costs	Total Returns
1967	281727	–
1968	152356	–
1969	53966	22674
1970	353333	49636
1971	484029	64028
1972	429454	94832
1973	500909	157340
1974	245957	208556
1975	100560	246202
1976	153166	265491
1977	27264	339814
1978	40896	404041
1979	43400	425015
1980	45864	442998
1981	48364	460980
1982	50832	478963
1983	35047	478963
↓	↓	↓
2018	35047	478963

APPENDIX 7

Annual Cash Flows for Net Social Benefit Calculation

The flow of social benefits consist of two main elements, the difference between market wages and the social opportunity cost of labour and the net savings in costs of moving due to the lower level of out-migration from the region attributable to the factory programme.

As explained in Chapter 9 long-run social opportunity costs of labour were estimated to be 70 per cent and 55 per cent of the market wage for men and women respectively. Thus the net social benefit from higher employment in this labour market would be:

Number of male employees x average wage x (1-0.7) +
number of female employees x average wage x (1-0.55)

That formulation was the basis of benefit stream A. Stream B was obtained using 10 per cent higher social opportunity costs and hence lower net benefits from an adjusted formulation, viz:

Number of male employees (1-0.77) +
number of female employees (1-0.605)

Saved moving costs were estimated from the net reduction in out-migration at the rate of £200 per move. The aggregate sum saved was spread over the years from 1967 to 1982 in proportion to the annual growth in factory employment. The resulting streams of benefit are reported in Table A.7.1.

Social costs arise in the provision of capital, administration and services. An upper estimate of the net social cost of capital is computed as the annual Development Commission subsidy to the provision of the factory structure, as indicated in Chapter 9. Service

and administration costs are estimated from diverse sources as described in Chapter 9. The resulting streams of cost are reported in Table A.7.2. It will be noticed that the net social cost of capital is negative from the year 2003 onwards. This is because from that year the rents obtianed from the factories exceed the amortization payments imputed as the latter decline to zero when the factories are finally 'paid for' in 2005.

TABLE A.7.1 -- Annual Social Benefits

Year	Net Benefits from Employment A (1)	Net Benefits from Employment B (2)	Saved moving costs (3)	Total Benefit Stream A -(1)+(3)	Total Benefit Stream B =(2)+(3)
1967	10598	8125	464	11062	8589
1968	10598	8125	-	10598	8125
1969	58335	48653	1703	60038	50356
1970	122653	100871	2508	125161	103379
1971	151180	124734	1053	152233	125787
1972	221022	183017	2632	223654	185649
1973	362561	298013	5419	367980	303432
1974	458667	377916	3871	462538	381787
1975	585228	482806	5109	590337	487915
1976	637182	525535	1920	639102	527455
1977	813511	674514	6874	820385	681388
1978	941935	784492	4242	946177	788734
1979	988287	822667	1765	990052	824432
1980	1034155	860416	1827	1035982	862243
1981	1079184	897470	1765	1080949	899235
1982	1103731	916504	1115	1104846	917619
1983	↓	↓	-	1103731	916504
1984	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓
1997	↓	↓	↓	↓	↓
1998	↓	↓	↓	↓	↓
1999	↓	↓	↓	↓	↓
2000	↓	↓	↓	↓	↓
2001	↓	↓	↓	↓	↓
2002	↓	↓	↓	↓	↓
2003	↓	↓	↓	↓	↓
2004	↓	↓	↓	↓	↓
2005	↓	↓	↓	↓	↓
↓	↓	↓	↓	↓	↓
2017	1103731	916504	-	1103731	916504

TABLE A.7.2 - Annual Social Costs

Year	Net Social Cost of Capital (1)	Administration costs (2)	Service Costs (3)	Total Cost Stream A =(2)+(3)	Total Cost Stream B =(1)+(2)+(3)
1967	8023	5009	-	5009	13032
1968	42656	7471	-	7471	50127
1969	42656	7938	1246	9184	51840
1970	66298	8116	2678	10794	77092
1971	81951	8322	3274	11596	93547
1972	84627	9210	4762	13972	98599
1973	100496	11814	7868	19682	120178
1974	97700	9049	10267	19316	117016
1975	101002	7885	12332	20217	121219
1976	100704	7885	13448	21333	122037
1977	96104	-	16852	16852	112956
1978	96104	-	19474	19474	115578
1979			20479	20479	116583
1980			21464	21464	117568
1981			22450	22450	118554
1982			23436	23436	119540
1983					
1984					
1997	88081				111517
1998	53448				76884
1999	53448				76884
2000	29035				52471
2001	9937				33373
2002	3822				27258
2003	-15759				7677
2004	-15865				7571
2005	-15997				7439
2017	-15997		23436	23436	7439