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LA THÈSE A ÉTÉ
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THE IMPACT OF THE REGIONAL DEVELOPMENT INCENTIVES ACT
PROGRAMME IN SELECTED SLOW GROWTH AREAS OF CANADA -
AN ANALYSIS OF INDUSTRIAL STRUCTURAL CHANGE
AND EMPLOYMENT GROWTH: 1961-1978

by

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A Thesis Submitted to the School of Graduate
Studies in Partial Fulfilment of the
Requirements for the Degree of
Doctor of Philosophy

Department of Geography
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Ottawa, Ontario
February 1983



Salamuddin Ansari, OTTAWA, Canada, 1983 .



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PREFACE

This study intended to present a detailed evaluation of the RDIA programme's effectiveness in bringing about industrial structural change and stimulating differential employment growth in the slow growing provinces of Canada. Since the Regional Development Incentives Act (RDIA) programme uses public funds, an independent evaluation of the programme would provide information on how well the resources are being used and what is being achieved as a result of public expenditure. For this purpose, a broad range of variables were needed. A formal request was made to the Department of Regional Economic Expansion (DREE) for providing information on these variables. Unfortunately, DREE refused to provide any information, except for the "Monthly Report to Parliament on Regional Development Incentives" for the 1970-78 period. Since these monthly reports contained information for each RDIA assisted establishment, a subsequent request was made through a Member of Parliament (MP) to DREE so that the monthly reports' information be provided in a machine readable form. Even this request was refused. Given the situation, there was no option, but to code information from 108 monthly reports for 6,079 establishments. Aside from the correspondence with bureaucrats, which took

three months, the coding of information and crosschecking took an additional six months. Thus enormous amounts of time were spent on preparing data, time which could have been better spent if data had been made available in a computer readable form. Given these limitations, a detailed evaluation of the RDIA programme was not feasible. This study nevertheless used all the information which was in the public domain.

Salamuddin Ansari

ACKNOWLEDGEMENTS

I express my deep gratitude to Dr. Roger A. Roberge, the thesis supervisor, for his constructive criticism, invaluable and inspiring guidance during the completion of this research. Special thanks are extended to Dr. H.P. Srivastava, Department of Geography, Dr. Sami Qadri, Department of Biology for going through an earlier draft and their comments, and to Dr. Shaukat Mirza, Department of Mechanical Engineering for his moral support and valuable suggestions.

I would like to thank Mr. R.J. Staveley, Head of the Regional Statistics, Manufacturing and Primary Industries Division, Mr. G. Welsh, Mr. Ken Young and other officials of Manufacturing and Primary Industries Division for providing required data and assisting in statistical analysis. Although the DREE officials did not cooperate in providing required data, they deserve thanks for making available a complete series of Monthly Report to Parliament on Regional Development Incentives: 1970-78.

My sincere thanks are due to the Government of India, Ministry of Education and Social Welfare for partially financing the research, and to the Department of Geography, University of Ottawa for providing some financial support and computer facilities to carry out statistical analyses and to produce the drafts of this thesis.

I am extremely grateful to Mr. R. U. Qadri and Mrs. Fehmida Qadri, my in-laws, for their encouragement and various kinds of support. Exceptional and affectionate thanks are due to my wife, Kaukab (Birjies), and my son, Tanzeel, for sparing their valuable time and patience. In addition to these, my wife has the greatest contribution to this thesis. She did not only provide moral support but also cheerfully typed the preliminary and final drafts of this thesis. Last but not the least, I am indebted to my parents, Mr. Abdul Rahim Ansari and Mrs. Hafizan Ansari, for sparing their time and letting me come to Ottawa to conduct the study. This thesis is gratefully dedicated to my parents.

Finally, all responsibility for the research and conclusions of this study, including weaknesses and errors, must remain with me.

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ABSTRACT

The federal government of Canada implemented the Regional Development Incentives Act (RDIA) programme in 1969 to deal with the problem of regional economic disparities. This programme provides incentive grants to manufacturing and processing establishments which are newly established, expanded, and/or modernized in the designated regions of Canada. Since the RDIA programme uses public funds, an independent research was conducted to identify the important objectives of the programme, and to provide information on how well the resources are being used and what is being achieved as a result of public expenditure. The main sources of data were Statistics Canada, and Monthly Report to Parliament on Regional Development Incentives, the Department of Regional Economic Expansion (DREE).

It was evident from the statements of DREE Ministers that the main objectives of the RDIA programme are to attract manufacturing or processing establishments to designated slow growth areas and thus to change favourably their industrial structure and to stimulate employment growth. The present study has concentrated on these objectives and examined the impact of the RDIA programme on industrial structural change and differential employment growth of the selected slow growing provinces.

In order to evaluate the RDIA programme's effectiveness, this study has: (i) analyzed industrial structural change and differential employment growth during the 1961-69 period in which there was no effect of the RDIA programme as well as during the 1970-78 period in which the programme was implemented, compared the results of the second period with those of the first period, and noted down significant-differences; (ii) examined the distribution patterns of all RDIA assisted establishments (net accepted offers) - (a) by type of industries (i.e. national growth industry, national declining industry), (b) type of projects (i.e. new plant, new product expansion, expansion, modernization), and (c) size of establishments (small, medium large); and (iii) determined the association between the distribution patterns of RDIA assisted establishments and the significant industrial structural changes as well as differential employment growth in the slow growing provinces. The evaluation design that was applied in the present research is a modified "before-and-after study of a target group". It incorporates the use of shift and share technique, regression analysis, and crosstabulations.

The success of the RDIA programme varies from province to province. By providing a vast majority of grants to national growth industries, and to new plants, new product expansion, small, and medium sized establishments in the national growth sectors, the RDIA programme appears to have.

implemented an adaptive policy and has been most successful in bringing about industrial structural change and stimulating the differential employment growth of Newfoundland, Saskatchewan, and Nova Scotia. The programme has achieved a moderate success in New Brunswick. Since the programme has provided a considerable proportion of grants to national declining industries as well as for expansion and modernization, its success in Manitoba is limited. The programme's effect in the province of Quebec and Prince Edward Island is found to be negative. In Quebec, as compared to other provinces, the RDIA programme appears to have adopted a defensive policy and given a considerable proportion of grants to national declining industries, for expansion and modernization, and to small and medium sized establishments in the national declining sectors. In addition, the grants given to Quebec were not sufficient in absolute terms. The results of the RDIA programme's effectiveness in the case of Prince Edward Island must remain tentative, since they are based on a highly aggregated data.

The present study has also presented some recommendations for improving the RDIA programme's effectiveness in achieving its objectives as well as for facilitating a subsequent evaluation of the programme. The study has put forward a series of questions which require further research to determine the RDIA programme's effectiveness in the slow growth areas of Canada.

CONTENTS

PREFACE	ii
ACKNOWLEDGEMENTS	iv
ABSTRACT	vi

<u>Chapter</u>	<u>page</u>
I. <u>INTRODUCTION</u>	1
Subject Matter of the Thesis	1
Relevance of This Research	5
Scope of the Study	8
Organization of the Thesis	11
II. REGIONAL DEVELOPMENT THEORY AND PRACTICE: THE INTERNATIONAL EXPERIENCE	14
Theoretical Framework	15
Regional Development Policies: An International Overview	22
Regional Development Policies in Canada	31
The RDIA Programme	41
Objectives of the RDIA Programme	41
The RDIA Incentive Grants	43
Other Federal-Provincial Programmes	47
Evaluation of the RDIA Programme	51
The Need for Programme Evaluation	51
The Nature of Evaluation Designs	52
The Evaluation of Previous Studies	57
III. RESEARCH METHODOLOGY AND EVALUATION DESIGN: A FRAMEWORK FOR EVALUATING THE RDIA PROGRAMME'S EFFECTIVENESS	66
Research Techniques Incorporated in Evaluation Design	66
Shift and Share as a Technique of Measuring Change in Industrial Structure and Regional Patterns of Growth	66
The Empirical Contents of Shift and Share Technique	73
Regression Analysis and Crosstabulation	84
The Evaluation Design Adopted in This Study	85
Evaluation of the Data Base	91

IV. PATTERNS OF STRUCTURAL CHANGE AND EMPLOYMENT GROWTH: SOME EMPIRICAL EVIDENCE OF THE RDIA PROGRAMME'S EFFECTIVENESS	100
The Province of Quebec	113
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	113
Patterns of Structural Changes and the RDIA Grants	117
Patterns of Differential Employment Growth and the RDIA Grants	130
Prince Edward Island	136
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	140
Patterns of Structural Changes and the RDIA Grants	141
Patterns of Differential Employment Growth and the RDIA Grants	147
Newfoundland	151
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	155
Patterns of Structural Changes and the RDIA Grants	156
Patterns of Differential Employment Growth and the RDIA Grants	163
New Brunswick	167
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	171
Patterns of Structural Changes and the RDIA Grants	172
Patterns of Differential Employment Growth and the RDIA Grants	179
Nova Scotia	184
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	185
Patterns of Structural Changes and the RDIA Grants	189
Patterns of Differential Employment Growth and the RDIA Grants	198
Manitoba	202
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	206
Patterns of Structural Changes and the RDIA Grants	207
Patterns of Differential Employment Growth and the RDIA Grants	215
Saskatchewan	220
Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78	223
Patterns of Structural Changes and the RDIA Grants	225
Patterns of Differential Employment Growth and the RDIA Grants	232

V.	SUMMARY AND CONCLUSION	238
	A Comparison with RDIA Objectives	240
	Some Recommendations	247
	For the RDIA Programme	248
	For Future Research	250

	<u>Appendix</u>	<u>page</u>
A.	SPATIAL DISTRIBUTION OF RDIA NET ACCEPTED OFFERS: 1970-78	255
B.	LIST OF FOUR-DIGIT MANUFACTURING INDUSTRIES: 1960	256
C.	LIST OF FOUR-DIGIT MANUFACTURING INDUSTRIES: 1970	258
D.	SPATIAL DISTRIBUTION OF RDIA GRANTS: TYPE OF PROJECTS BY TYPE OF INDUSTRIES: 1970-78 . .	260
E.	SPATIAL DISTRIBUTION OF RDIA GRANTS: SIZE OF ESTABLISHMENTS BY TYPE OF INDUSTRIES: 1970-78	261
F.	DISTRIBUTION OF RDIA GRANTS - PROVINCE BY TYPE OF INDUSTRIES: 1970-78	262
	SELECTED BIBLIOGRAPHY	263

LIST OF TABLES

Table	Page
1. Distribution of Manufacturing Industries by Province	94
2-A. Patterns of Employment Growth by Province and Region: 1961-69	106
2-B. Patterns of Employment Growth by Province and Region: 1970-78	107
3-A. Patterns of Value Added Growth by Province and Region: 1961-69	111
3-B. Patterns of Value Added Growth by Province and Region: 1970-78	112
4-A. Industrial Patterns of Employment Growth in Quebec: 1961-69	115
4-B. Industrial Patterns of Employment Growth in Quebec: 1970-78	116
4-C. Distribution of RDIA Grants among Loser Industries of Quebec: 1961-69 and 1970-78 . . .	126
4-D. Distribution of RDIA Grants among Gainer Industries of Quebec: 1961-69 or 1970-78 . . .	129
4-E. Distribution of RDIA Grants among Various Industries of Quebec: 1970-78	132
4-F. Distribution of Standardized Residuals among Various Industries of Quebec	134
5-A. Industrial Patterns of Employment Growth in Prince Edward Island: 1961-69	138
5-B. Industrial Patterns of Employment Growth in Prince Edward Island: 1970-78	139
5-C. Distribution of RDIA Grants among Various Industries of Prince Edward Island: 1970-78 . .	148

6-A.	Industrial Patterns of Employment Growth in Newfoundland: 1961-69	153
6-B.	Industrial Patterns of Employment Growth in Newfoundland: 1970-78	154
6-C.	Distribution of RDIA Grants among Various Industries of Newfoundland: 1970-78	164
7-A.	Industrial Patterns of Employment Growth in New Brunswick: 1961-69	169
7-B.	Industrial Patterns of Employment Growth in New Brunswick: 1970-78	170
7-C.	Distribution of RDIA Grants among Various Industries of New Brunswick: 1970-78	181
8-A.	Industrial Patterns of Employment Growth in Nova Scotia: 1961-69	187
8-B.	Industrial Patterns of Employment Growth in Nova Scotia: 1970-78	188
8-C.	Distribution of RDIA Grants among Various Industries of Nova Scotia: 1970-78	197
9-A.	Industrial Patterns of Employment Growth in Manitoba: 1961-69	204
9-B.	Industrial Patterns of Employment Growth in Manitoba: 1970-78	205
9-C.	Distribution of RDIA Grants among Various Industries of Manitoba: 1970-78	216
10-A.	Industrial Patterns of Employment Growth in Saskatchewan: 1961-69	221
10-B.	Industrial Patterns of Employment Growth in Saskatchewan: 1970-78	222
10-C.	Distribution of RDIA Grants among Various Industries of Saskatchewan: 1970-78	233

LIST OF FIGURES

Figure		Page
1:	Designated Regions of Canada	10
2:	Programme Evaluation Designs	54
3:	The RDIA Programme Evaluation Design	89
4-A:	Patterns of Employment Growth in RDIA Designated Areas by Province: 1961-69	104
4-B:	Patterns of Employment Growth in RDIA Designated Areas by Province: 1970-78	105
5-A:	Patterns of Value Added Growth in RDIA Designated Areas by Province: 1961-69	109
5-B:	Patterns of Value Added Growth in RDIA Designated Areas by Province: 1970-78	110
6:	Distribution of RDIA Grants by Province: 1970-78	119
7-A,B:	Distribution of RDIA Grants in Quebec by Project Type and Industry Type: 1970-78	120
7-C:	Distribution of RDIA Grants in Quebec by Size of Establishment: 1970-78	122
8-A,B:	Distribution of RDIA Grants in Prince Edward Island by Project Type and Industry Type: 1970-78	143
8-C:	Distribution of RDIA Grants in Prince Edward Island by Size of Establishment: 1970-78	145
9-A,B:	Distribution of RDIA Grants in Newfoundland by Project Type and Industry Type: 1970-78	157
9-C:	Distribution of RDIA Grants in Newfoundland by Size of Establishment: 1970-78	159
10-A,B:	Distribution of RDIA Grants in New Brunswick by Project Type and Industry Type: 1970-78	174

10-C:	Distribution of RDIA Grants in New Brunswick by Size of Establishment: 1970-78 . .	176
11-A,B:	Distribution of RDIA Grants in Nova Scotia by Project Type and Industry Type: 1970-78 . .	190
11-C:	Distribution of RDIA Grants in Nova Scotia by Size of Establishment: 1970-78	193
12-A,B:	Distribution of RDIA Grants in Manitoba by Project Type and Industry Type: 1970-78	208
12-C:	Distribution of RDIA Grants in Manitoba by Size of Establishment: 1970-78	211
13-A,B:	Distribution of RDIA Grants in Saskatchewan by Project Type and Industry Type: 1970-78 . .	226
13-C:	Distribution of RDIA Grants in Saskatchewan by Size of Establishment: 1970-78	228

Chapter I

INTRODUCTION

1.1 SUBJECT MATTER OF THE THESIS

Generally speaking, the pace of economic development is not the same in all regions of a country. Various socio-economic and historical factors account for faster growth in some regions rather than others. Regional economic disparities result. Especially in a vast country like Canada, with great inter-regional variations in resource endowments and a history of east to west development, the country is more likely to be faced with the problem of regional disparities. Whether one examines earned income per capita, personal income per capita (or per family unit), value added, labour force participation rate, unemployment rate and the rate of investment per capita as an indicator, one finds disparities among the various provinces, as well as among the economic regions within each province that have persisted for a long time (Howland 1957; Caves and Holton, 1959; Camu, Weeks and Sametz, 1964; Economic Council of Canada, 1965: 139; George, 1970; Government of Canada, 1973; Springate, 1973: 1-7; Gillespie and Kerr, 1977; DREE, 1979a, 1979b). The fact is that some areas of Canada, especially the Atlantic provinc-

es, lag substantially behind others in socio-economic development as measured by most indicators.

In spite of the Canadian government efforts in recent decades to tackle the problem of socio-economic regional disparity in the country, it would seem that the problem is far from being resolved. However, the establishment of the Department of Regional Economic Expansion (DREE) by the federal government in 1969 was a significant effort in this direction. Although all the programmes of DREE are designed to reduce or eliminate regional disparities, it is the Regional Development Incentives Act (RDIA) programme which is of special significance. It is this programme which is at the basis of the Canadian Government's effort to change the industrial structure and stimulate employment growth in the slow growth areas of Canada. In order to achieve this objective the RDIA programme provides incentive grants to secondary manufacturing and processing industries for establishing a new plant or expanding and/or modernizing an existing one in the slow growth areas (the so called designated areas). Between January 1, 1970 and December 31, 1978 the RDIA programme provided incentive grants to 5,136 establishments¹ which were either newly established or expanded

¹ The RDIA programme came into effect on July 1, 1969. The first monthly report was published on October 27, 1969, in which one accepted offer was reported. Between October 1969 and December 31, 1969 seventeen accepted offers were reported, in which construction or installation was begun or an announcement of intended construction was made by the company. These offers were excluded from the analysis because their effect on structural change and differential

and/or modernized in the slow growth areas. These establishments generated 3,517.5 million dollars in the form of private capital investment (at a cost of 758.4 million dollars as incentive grants) and were expected to create 157,740 new jobs in these areas (see Appendix A). This research examines the effects of these establishments (hereafter RDIA assisted establishments) in changing the industrial structure and stimulating employment growth of the selected slow growth areas of Canada.

The first objective of this study was to examine industrial structural change and differential employment growth in the selected slow growth areas and to note down significant differences between the 1961-69 period and the 1970-78 period. In the first period there was no RDIA programme.² The second period, on the other hand, was the one in which the RDIA programme was implemented. In order to identify the significant structural differences, the results of the second period were compared with those of the first period.

The second objective of this study was to determine the impact of the RDIA programme in bringing about structural changes and stimulating differential employment growth in

employment growth was considered to be negligible. Over the 1970-78 period there were 5,136 net accepted offers which were included in the analysis. For further details see Chapter III.

² Since the RDIA programme became active in the 1969, it was assumed that there was no effect of this programme during the 1961-69 period.

the selected slow growth areas; in other words, to assess the success of the RDIA programme in achieving its stated objectives of changing favourably the industrial structure and stimulating the differential employment growth in the slow growth regions. For this purpose the distribution patterns of RDIA assisted establishments were examined in the following terms: (i) type of projects - whether the majority of grants were given to new plants and new product expansion which can be easily put in the direction of changing patterns of demand (Johnson and Cathcart, 1979) or were provided for expansion and modernization which tend to create fewer jobs and maintain old existing industrial structure, what proportion of these types of projects were in the national growth sectors; (ii) type of industry - whether the vast majority of RDIA grants were allocated to national growth industries which tend to improve industrial mix and stimulate growth in a region (Perloff et al., 1960; Richardson, 1969) or to those which were declining, and (iii) size of establishment - whether the vast majority of RDIA grants were offered to small and medium sized establishments which tend to be innovative, indigenous, more job creating, and closely tied to the regional economy (Robinson and Storey, 1981; Steed, 1982) or provided to large sized establishments which tend to be more capital-intensive and fewer direct jobs creators (Woodward, 1975; Robinson and Storey, 1981), and what proportion of these size of establishments were in the na-

tional growth sectors. In addition to these, an attempt was made to examine the relationship between the expected new jobs to be created by RDIA assisted establishments and the differential employment growth (discussed in Chapter III) of a province. It is this type of analysis by which a determination of the overall effectiveness of the RDIA programme in changing the industrial structure and stimulating the differential employment growth in the slow growing provinces of Canada was achieved.

1.2 RELEVANCE OF THIS RESEARCH

The present study is related to the earlier works by the Atlantic Provinces Economic Council (APEC, 1971), Sprin- gate (1972, 1973), and DREE (1973). These studies were primarily concerned with the effectiveness of the RDIA programme in attracting manufacturing establishments to the designated slow growth areas. More specifically, they attempted to determine (i) the extent of the effectiveness of this programme in bringing the manufacturing establishments to the slow growth areas, (ii) the incremental value of the investment capital and jobs associated with manufacturing establishments, and (iii) the effectiveness of the grant programme in modifying investment decisions of manufacturing concerns. These are basic questions, but difficult to answer because they involve the behavioural aspect of entrepreneurs and discretionary power of the DREE officials. Al-

though these studies concentrated on a basic theme, they did not examine the impact of the RDIA programme on the economy of the slow growth areas. It is this important aspect which is the main focus of this thesis.

The earlier studies, mentioned above, have also been criticized for their research methodology. Some of the major criticisms, leveled at these studies are that they are based on personal interviews and mail surveys. Although these methods are sometimes acceptable, they run the risk of getting biased information (Gillespie and Kerr, 1977). The direction of bias given in such interviews and mail surveys is also significant factor to be considered. Furthermore, these studies cover a very short time period - approximately two and half years of programme operation. Some of them are based on a sample of less than four per cent (DREE, 1973). Consequently, any evaluation of programme effectiveness based on such small samples and short time spans may be less representative of the real situation. Finally, these studies are criticized on the basis of their evaluation designs in which there are no provisions made for measuring conditions before the programme came into existence.

In terms of total impact, the RDIA programme may be very broad and varied. For example, the RDIA funded establishments may have generated indirect employment in the same sector (manufacturing) or other sectors of the economy depending upon their inter-industrial linkage. Similarly,

they may have had an impact on income, employment, education, housing, health, transportation, population migration, and so on. However, these impacts are not examined because they are beyond the scope of this study. Since it is a well publicized objective (discussed in Chapter II) of the RDIA programme to change the industrial structure and foster economic growth in the slow growth areas, the present research examines the effects of the RDIA assisted establishments on the structural changes and the differential growth of employment. It covers a fairly long time period of programme operation stretching over nine years and takes into account all RDIA assisted establishments. It utilizes the published data available from DREE as well as from Statistics Canada. The data used in this study were most extensive and the best available. Since DREE refused to provide data in machine readable form, the coding of data from 108 monthly reports (for 6,079 cases) to a computer disk was extremely time consuming. Furthermore, the evaluation design adopted in the present research (discussed in Chapter III) incorporates a basis for comparing the results of programme period against a base period.

In a detailed literature survey (Chapter III), it has been noted that the majority of studies used employment data for measuring the structural change and employment growth of an area. There were very few studies which have used value added data. The present study has used both manufacturing employment and value added data. It has also been pointed

out that the majority of studies used employment data at a more aggregated level (one or two-digit SIC codes) of industrial classification. By contrast, the present study has used employment and value added data at a more disaggregated level (four-digit SIC codes) of industrial classification to measure the structural change and employment growth in Canada's slow growing provinces.

Thus the present research deals with an important policy concern and is distinct from the above mentioned studies. With respect to research methodology and evaluation design, it is, hopefully, an improvement over the previous ones, since it is more all encompassing as well as being empirically based.

1.3 SCOPE OF THE STUDY

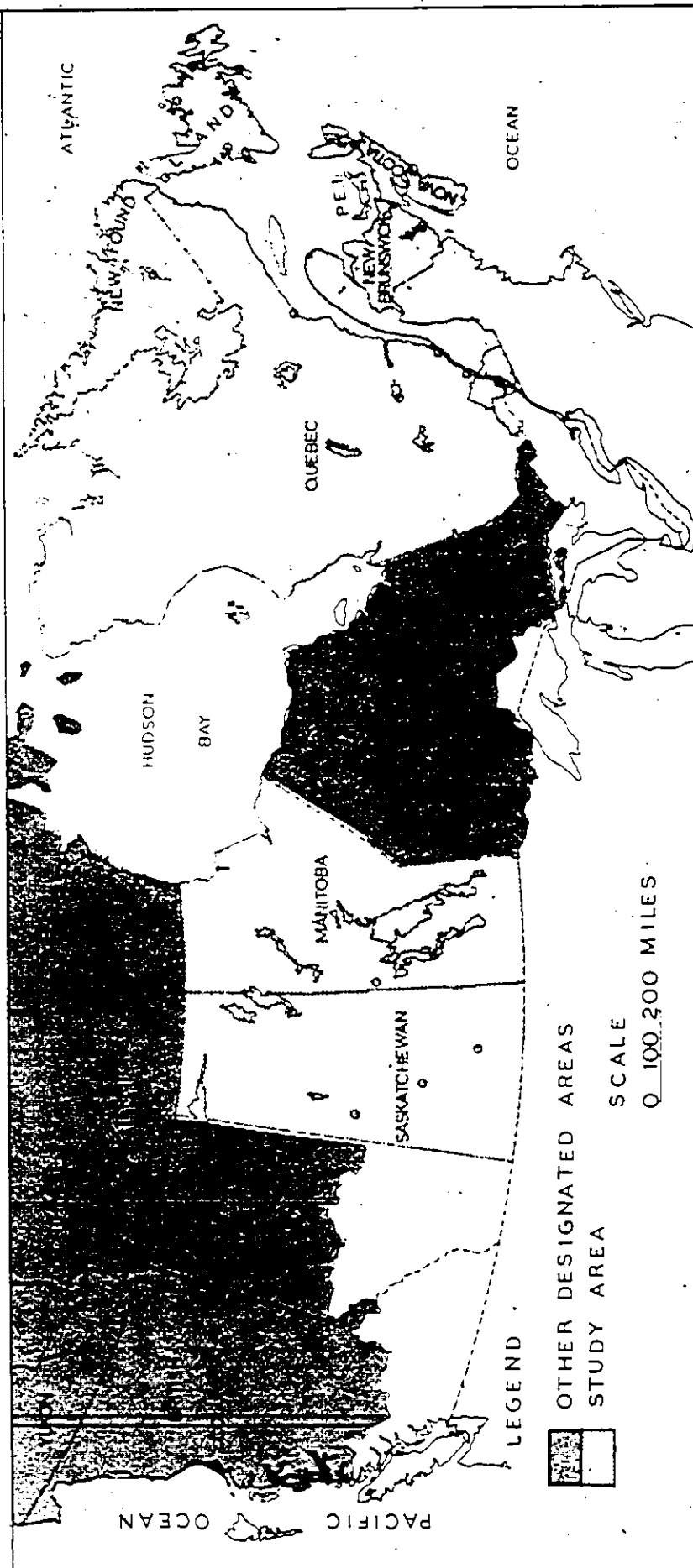
This study analyzes only those newly established, expanded and/or modernized establishments of the RDIA designated areas which accepted incentive grants under the RDIA programme over the 1970-78 period. These establishments were selected because a full range of data was available on their location, type of project, type of product or process, estimated capital cost, estimated amount of incentive grants, and the expected new jobs to be created. Other than these, there may be some newly established, expanded and/or modernized establishments in the slow growth areas which did not receive incentive grants from the RDIA programme. Although the contributions of such establishments in changing

the industrial structure and stimulating employment growth of the slow growth areas cannot be ignored, they have not been included in this study because of the unavailability of data.

The slow growth areas are those which have been designated eligible for incentive grants under the RDIA programme. These designated areas include the entire provinces of Newfoundland, Prince Edward Island, Nova Scotia and New Brunswick of the Atlantic region, the entire provinces of Manitoba and Saskatchewan of the Prairie region, and all of the Yukon and Northwest Territories. They also include most parts of the province of Quebec, as well as the northern portions of Ontario, Alberta and British Columbia. This study analyzes only the Atlantic provinces, Quebec, Manitoba, and Saskatchewan (Figure 1). The selection of these seven provinces is justified on the grounds that together they accounted for 90.2 per cent of net accepted offers, 82.1 per cent of estimated capital cost, 84.3 per cent of incentive grants, and 89.2 per cent of expected new jobs (see Appendix A). Consequently, the impact of the RDIA establishments on changing the industrial structure and stimulating employment growth was expected to be more pronounced in these provinces rather than others which comprise a very small percentage of these establishments.

The study covers a time span of eighteen years: 1961-1978. The year 1978 is the cut-off point for which data on manufacturing employment and value added were avail-

FIGURE 1: DESIGNATED REGIONS OF CANADA



SOURCE: DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

able at the time of the study. The whole time span has been equally divided into two periods: the first 1961-69, and the second 1970-78. The division of the time span into two periods serves as a basis for comparing the structural change and employment growth in the second period with that of the first period, and thus identifying the significant differences that could have occurred as a result of the RDIA programme. It also eliminates the problem of lack of data comparability,³ and reduces the distortion in proportionality shift or industrial mix effect.⁴

1.4 ORGANIZATION OF THE THESIS

This introductory chapter has discussed briefly the subject matter of the thesis as well as its objectives. It has also identified those studies which have influenced the present research and has emphasized its importance.

The second chapter sets this analysis into the context of regional development theories as well as relates it to international, and national (Canadian) regional develop-

³ For the 1961-1969 period the manufacturing employment and value added data were reported on the basis of revised Standard Industrial Classification (SIC) manual of 1960, whereas for the 1970-1978 period they were reported on the basis of revised SIC manual of 1970. At four-digit, SIC codes of 1970 were slightly different than those of 1960 (see Appendices B and C).

⁴ When discussing the limitations of the shift and share technique Dunn noted that "the larger the time period the more distortion that results from the fact that differential changes throughout the period have altered the spatial distribution of the rapid-slow-growth sectors" (Dunn, 1960: 108).

ment policies. More specifically, the chapter discusses a number of regional development theories in terms of their practical application in the regional development policies of some European countries, the United States, and Canada. It also outlines the RDIA programme as well as other federal-provincial competing programmes. Finally, it discusses the need for programme evaluation and programme evaluation designs, and critically examines the previous studies which have made an attempt to evaluate the RDIA programme.

The third chapter begins with a discussion of research techniques (i.e. shift/share and regression analysis, and crosstabulation) that are utilized in the evaluation design. It then outlines the format of the evaluation design that is adopted in this study. Finally, it deals with the data used in this study and points out the problems which were encountered at the time of data collection and its arrangement.

The fourth chapter discusses the empirical results. It has seven major sections, one for each province included in this study. It notes down the patterns of structural changes and differential growth of employment in a province, as revealed by the shift/share results which are carried out at the sector level as well as at the disaggregated level of manufacturing industries. In order to explain these patterns, it examines the pre-existing industrial structure of the province as well as the distribution patterns of RDIA

assisted establishments. Finally, it presents conclusions about the effectiveness of the RDIA programme in changing the industrial structure and stimulating the differential employment growth of the province.

The fifth chapter compares the findings of this study with the objectives of RDIA programme. It also presents recommendations both for the RDIA programme and for future research.

Chapter II

REGIONAL DEVELOPMENT THEORY AND PRACTICE: THE INTERNATIONAL EXPERIENCE

The purpose of this chapter is to show the relationship of the present study to regional growth theories as well as international and national (Canadian) regional development policies. More specifically, it outlines the main concepts of regional growth theories and their application in regional development policies of certain industrialized countries, such as the Netherlands, West Germany, France, and the United States of America. It identifies the essential features of the regional development policies of these countries and compares them with Canadian policies. It also presents a detailed discussion of the RDIA programme and other federal and/or provincial programmes. It also goes on to identify the need for programme evaluations and outlines the most commonly used evaluation designs. Finally, it provides a critical review of the research methodology and evaluation designs used in previous studies and briefly discusses the evaluation design adopted in the present study.

2.1 THEORETICAL FRAMEWORK

In an attempt to explain the economic development of regions, a number of regional growth theories have been developed. According to Stilwell (1970) these theories can be classified into the following groups and sub-groups:

1. The theories that emphasize the role of resource allocation in regional growth.
 - a) Inter-regional resource allocation models.
 - b) Intra-regional resource allocation models.
2. The theories that emphasize the role of regional exports in regional development.
3. The theories that emphasize the role of investment in regional development.
4. The theories that emphasize the self-perpetuating nature of regional growth.
5. Other theories of regional growth.

The theories of group 1 (a) are generally known as neoclassical regional growth models. The main proponents of these theories are Borts (1960), Borts and Stein (1964), Romans (1965), and Siebert (1969). According to Richardson the basic assumptions underlying these theories are that "given identical production functions in all regions, labour will flow from low to high wage regions and capital will flow in the opposite direction. These flows continue until factor returns are equalized in each region.the regional growth process will be associated with convergence in re-

gional per capita incomes" (Richardson, 1979: 137). Thus these theories emphasize the role of market forces that generate inter-regional factor mobility and reduce regional disparities. However, when the market forces fail, a regional development policy is required to reduce regional disparities.

The theories of group 1 (b) are generally called sector theories or stages of development theories. The sector theory originated from the works of Fisher (1933, 1939), Clark (1940), Perloff (1957), and Kuznets (1958, 1971). Rostow (1960) is generally regarded as having developed the most elaborate stage theory of regional development. The sector theories assume that in the process of development the factors of production (labour and capital) in a region will move from low paying primary industrial sectors (e.g. agriculture, mining) to high paying secondary, tertiary, and quaternary industrial sectors (e.g. manufacturing, trade and commerce, finance, insurance, research, and planning). Implicit in this assumption is the concept of income elasticity of demand which is higher for secondary, tertiary, and quaternary goods and services than the primary products. The stage theories postulate that development takes place in a sequence of stages. At each stage a region has a unique industrial structure. Similar to the theories of group 1 (a), these theories emphasize the interplay of the market mechanism in regional growth. However, the theoretical con-

cepts developed by these theories may be of great use in formulating and implementing an appropriate regional development policy in a country. -

The theories of group 2 are generally known as export base models or staple export theories. In the case of urban or city growth they are called economic base theories. These theories originated from the works of Innis (1933), Meier (1953), Andrews (1953), Hoyt (1954), and North (1955). North has advocated that a region's "growth is closely tied to the success of its exports and may take place either as a result of the improved position of existing exports relative to competing areas or as a result of the development of new exports" (North, 1955: 251). He has emphasized that for the continuous growth of a region, there is a need to develop new exports, such as shifting from a staple export base to industrial export base, and finally to tertiary export base. Implicit in these theoretical assumptions are the concepts of multiplier effects of export base through backward linkage, forward linkage and final demand linkage. The best example of multiplier effects of a staple export on Canadian economic growth is cited by Meier (1953); that is, "in the first decade of the twentieth century, when increased world demand for wheat not only led to an expansion of warehousing, transport, public utilities, and construction in the Prairie Provinces, but also, by increasing income, augmented demand for secondary products and thereby induced investment in a host of other industries" (North, 1955: 255). These

concepts have also been utilized by some industrialized countries in formulating their regional development policies.

The theories of group 3 owe much to the works of Rahman (1963), Sakashita (1967), and Ohtsuki (1971). These theories are based on the concept of multiplier effects of investment in regional economic growth. Sakashita has pointed out that "investment in each region will have an incremental productivity effect on the same region's aggregate income.The increased income of the region will, in turn, determine the amount of the region's saving in the next period" (Sakashita, 1967: 162). Sakashita (1967) and Richardson (1979) have argued that once capital is induced in a region, a positive feedback loop of the following form is generated: public investment → increased private investment → increased productivity → increased income → saving → investment. This form generally applies in the case of less developed or slow growing areas of a country where much of the public investment goes in form of infrastructure development, social over-head capital formation, and incentive grants. It is to be noted that the concepts of these theories have been most widely applied in the regional development policies of industrialized countries.

The theories of group 4 are commonly known as growth pole theory (Perroux, 1950), development pole or growth centre theory (Isard and Schooler, 1959; Fox, 1966; and Hansen, 1968), cumulative causation theory (Myrdal, 1957), unbal-

anced growth (Hirschman, 1958), core-periphery theory or theory of polarized development (Friedmann, 1967), and regional development potential theory (Biehl, 1980; De Graaff and Nijkamp, 1981). Except for Perroux's growth pole, all other theories are developed within a spatial context. The basic hypothesis underlying these theories is that because of historical, geographical, or reasons of initial advantage the economic activities tend to concentrate in certain areas. Consequently, there arise internal and external agglomeration economies and a cumulative type of growth. The areas experiencing this cumulative type of growth are called "core areas" by Friedmann, or "North" by Hirschman, or "growth centers" by Hansen. The rest of areas are called "periphery" by Friedmann, or "South" by Hirschman. According to Hirschman, "polarization" and "trickling down" effects are the two forces that operate during process of economic growth. Myrdal called these forces "backwash" and "spread" effects respectively. According to Myrdal the backwash effects outweigh the spread effects and generate selective migration of labour, capital, goods and services from periphery to core areas and thus favour the growth of core areas. However, the spread effects favour the growth of peripheral areas by creating demands for their products and diffusion of innovations. Although there is no fixed time limit, Hirschman has argued that the initial polarization effects would lead to trickling down effects in future

and thus foster growth in the "South" or peripheral areas. These theoretical concepts are well accepted by some industrialized countries and are applied in their regional development policies.

The rest of the theories and concepts of regional growth are included in group 5. The most important are the theory of diffusion of innovations (Pedersen, 1970; Berry, 1972), and a general theory of regional growth (Richardson, 1973).

The theory of diffusion of innovations is mostly discussed in the context of urban growth. According to this theory the vertical and horizontal diffusion of innovations is mainly responsible for the hierarchical and spatial variations in urban growth rates. Generally, the growth-inducing innovations filter down from large metropolitan centres to smaller centres. Berry (1972) has suggested that this hierarchical pattern of diffusion of innovations is due to "(1) a sequential 'market-searching' process in which entrepreneurs seek new opportunities in purposeful sequence from larger to smaller centres; (2) a 'trickle-down' process in which the larger centres spin off older and declining industries to smaller centres in pursuit of cheaper labour; and (3) an 'imitation effect' in which decision-makers in small cities follow the innovation adoptions made in the larger centres" (Bourne, 1975: 21). These innovations stimulate growth in the basic and non-basic sectors of a centre. This

growth, in turn, increases the propensity to adopt more innovations, and thus generate a cumulative nature of growth in that centre. Similarly, the innovations that spread out horizontally from each centre generate growth in its surrounding areas. These theoretical concepts are considered to be useful for formulating and implementing regional development policies.

Richardson (1973) has developed a general theory of regional growth which is based on three concepts: (i) agglomeration economies, (ii) locational constants, and (iii) locational preferences. He has elaborated these concepts and tried to explain regional growth processes.

In addition to these purely theoretical works, there is some empirical work which has attempted to analyze patterns of regional growth. The most important are the works of Perloff et al. (1960), and Richardson (1969). On the basis of regional growth analysis, Richardson has argued that "some regions may grow rapidly because the composition of their industrial structure is favourable in the sense that it contains an above average proportion of rapid-growth industries. But a region may grow in a distinctively different way, as a result of 'within-industry' changes. In summary, a region may grow either because it has industries that are growing fast nationally or because it is gaining an increasing proportion of a given industry or industries, regardless of whether these industries are growing or not"

(Richardson, 1969: 343-44). A regional development policy which attempts to attract industries and thus foster growth in a region must therefore take into account the evolving industrial structure.

Thus the concepts developed by above mentioned theories provide guidelines for formulating and implementing regional development policies in an effective way. The succeeding section outlines the regional development policies of a few West European countries, the United States, and Canada in which these theoretical concepts are applied.

2.2 REGIONAL DEVELOPMENT POLICIES: AN INTERNATIONAL OVERVIEW

The Netherlands: The Organization for Economic Co-operation and Development (OECD, 1970, 1971, 1974a, 1975, 1976, 1978) and Hendriks (1974, 1982) have discussed in detail the regional development policies of the Netherlands. Hendriks has pointed out that the Netherlands' regional policy can be divided into four successive phases. In the first phase, which started in 1952, the main emphasis was to alleviate structural unemployment problems. Its main objectives were the following: (i) full employment, (ii) stability of prices, (iii) equity of the balance of payments, (iv) economic growth, and (v) acceptable distribution of income. The second phase of Dutch regional policy started in 1959 when the dispersion of industry and economic activities were emphasized. During this phase the Spatial Planning Act was

passed, whose main objectives were the following: (i) prevention of the strong outmigration of population from peripheral areas, (ii) prevention of excessive income differentials among regions, and (iii) prevention of excessive congestion in concentrated areas. The third phase of regional policy started in 1969, in which emphasis was given on attracting capital-intensive industries to "development areas". The final phase of regional policy started in 1973, in which emphasis was given to reduce congestion in the Rimcity (The Amsterdam-The Hague-Rotterdam-Utrecht) area by designating Groningen in the North as the potential counter-magnet to the attraction of the Rimcity. This new approach recognized each region as a part of a system of regions.

Hendriks has mentioned that it is the responsibility of the Ministries of Economic Affairs, Social Affairs, Agriculture, Labour, and Housing and Spatial Planning to formulate and implement the regional development policies in the Netherlands. For purposes of coordination, these Ministries have formed an interministerial committee. The Ministry of Economic Affairs, in consultation with provincial authorities, has designated the "development areas" and "development nuclei". He has further noted that after being designated, the development areas and development nuclei are provided six types of assistance: (i) construction of industrial sites, (ii) improvement of transport infrastructure, (iii) improvement of public utilities, (iv) construc-

tion of industrial buildings, (v) training and retraining of workers, and (vi) construction of houses for employees of new industries. The government also provides direct financial support to companies locating in certain development nuclei. The subsidies are available for new companies as well as for expansions. The total value of subsidy to be given is twenty-five per cent of total investment cost, which may not exceed three million Dfl. In the beginning, the unemployed labourers were given some grants to migrate out of the development areas. This programme was not very successful. That is why it was discontinued in 1959. Since then the migration allowance is given to unemployed labourers for migrating only within the development areas to development nuclei. Finally, he has mentioned that along with these positive incentives, the Dutch government has introduced since 1973 a system of licenses to limit the investment in the congested or "Rimcity" area.

It is evident from the above discussion that the Netherlands has developed an elaborate system of regional development policies. Hendriks has noted that the emphasis of the Dutch regional policy on development nuclei for fostering growth in development areas brings it very close to the "growth pole" concept.

West Germany: A detailed discussion of regional development policies of West Germany is presented by Krumme (1974) and OECD (1970, 1971, 1974a, 1975, 1976, 1978).

Krumme has indicated that it is the Federal Spatial Planning Law of 1965, which initiated active regional development policies in West Germany. This law stressed the need for consultation and coordination of spatial planning problems between the federal and state governments. Consequently, State and Federal Intergovernmental Cabinet Commission (MKRO), Intracabinet Committee (IMARO), and Interdepartmental Committee (IMNOS) were established to facilitate the vertical and horizontal cooperation and coordination. According to Krumme, the German regional policies can be divided into three categories: (i) spatial planning policies, (ii) sector policies, and (iii) regional economic policies.

Krumme also indicates that the spatial planning policies were implemented to improve the living conditions in rural and depressed areas, and to tackle the structural problems of urban and industrial agglomerations. For this purpose four-levels of central places were selected in depressed areas. The urban and industrial agglomerations, with unhealthy living, working, social, and economic conditions, were identified. They are provided with appropriate infrastructure facilities and financial assistance. He further points out that under sector policies the financial assistance is given to some selected sectors, such as agriculture, mining, shipbuilding, data processing, aerospace, and atomic energy, whereas the regional economic policies concentrate on fostering industrialization in designated regions and "Federal Expansion Centers".

It is noted by Krumme that the federal expansion centres which lie within "action programme regions" are called "development centres". In these centres and designated areas the federal and state governments are trying to create new industrial jobs by providing investment subsidies in the form of corporate income tax deductions, direct investment grants and loans with favourable interest rates. These subsidies are given to new establishments, conversion, rationalization, expansion, and modernization cases. In the beginning, the amount of industrial loan was determined by the number of jobs to be created, but later on, it primarily depended on the amount of capital to be invested. The maximum value of these subsidies is subject to some specified ceilings. The federal-provincial government also provides financial aid for developing industrial sites and infrastructure facilities. Krumme has mentioned that in addition to these economic incentives, the German regional policy exercises some sort of control. For example, the development centres, which do not fulfil their developments objectives within five years, are subject to the loss of their designation.

It is evident from the above description that there are some similarities in the regional development policies of West Germany and the Netherlands. For example, both countries provide infrastructure facilities and investment subsidies, and have put ceiling on incentive grants. They

do exercise some sort of control. The development centers of West Germany and the development nuclei of the Netherlands appear to be selected on similar criteria.

France: Prud'homme (1974) and OECD (1970, 1971, 1974a, 1974b, 1975, 1976, 1978) have indicated that although in France regional development policy has existed since 1950, it is only since the early 1960s that this policy became more active and took some positive steps to tackle regional problems. In 1963 an Agency for Regional Planning and Action (DATAR) was created. Its main task was to collect information that would help the government in taking regional planning decisions. Its second task was to provide coordination among interministerial committees. In order to facilitate coordination, DATAR was provided with some financial power under Funds for Regional Policy (FIAT) and was placed under the direct authority of the prime minister. Prud'homme has further indicated that the French regional development policy is centred around five major problems: (1) decentralization of industry and tertiary activities; (2) urban growth; (3) transportation; (4) rural activities; and (5) environmental protection. For dealing with these problems the French regional policy uses three tools: (1) public investment, (2) economic incentives, and (3) direct controls. It is the decentralization of industry through economic incentives, which is of special interest to the present study. For decentralizing industries and creating industrial employment in the designated areas, the French

regional economic policy has taken the following measures. It provides investment subsidies, loans and tax relief. The rates of these economic incentives varies from one region to another, and also from one type of project (new plant) to another (expansion). It is noted by Prud'homme that along with these positive incentives, the French regional policy has introduced a number of negative economic incentives (i.e. construction tax, transportation tax) to discourage firms from investing in the Paris area. In addition to this, it uses direct control for industrial construction in the Paris region through building permits. Thus the French regional policy, like those of Dutch and German, provides investment subsidies, and exercises some sort of control.

The United States of America: Hansen (1974), OECD (1970, 1971, 1974a, 1975, 1976, 1978, 1980), and Widner (1982) have presented a detailed discussion of the regional development policy in the U.S.A.. In the United States the regional development policy existed as early as the 1930s. Similar to other industrialized countries, it acquired a renewed momentum in early 1960s. The Appalachian Regional Development Act (ARDA) and the Public Works and Economic Development Act (PWEDA) are the most important acts which were passed to deal with regional problems: high unemployment rates, and low income.

Hansen has indicated that for purpose of coordinating federal-state development efforts, ARDA established the Appalachian Regional Commission (ARC). The ARC was authorized

to develop its own programmes and provide assistance in nine fields: health, housing, vocational education, soil conservation, mine restoration, water survey, water and sewer facilities, timber development, and highway development. He further noted that for implementing regional development policies the ARC designated four levels of growth areas, the level 1 having the highest growth potential, and the level 4 the lowest. The ARC emphasized that investments "made in the region under this Act (ARDA) shall be concentrated in areas where there is the greatest potential for future growth, and where the expected return on public dollars will be the greatest" (Hansen, 1974: 291). In the beginning it gave more emphasis to highway development, recognizing that the lack of accessibility inhibited the growth of regions. Later on, it emphasized the role of human resource investments in regional economic growth. According to Hansen "the ARC's goal of providing the people of Appalachia with the health and skills they require to compete for opportunity wherever they chose to live represents a landmark in the evolution of American regional policy" (Hansen, 1974: 296-97).

Similar to the ARDA, the PWEDA has established regional commissions. They are known as the "Title V Commissions" and are governed by the Department of Commerce. The PWEDA has also created Economic Development Administration (EDA) to help the regional commissions and provide financial assistance to multi-state regions which are faced with

chronic economic distress. Hansen has noted that the EDA assistance is available under three conditions: (i) persistent unemployment, (ii) median family income less than forty per cent of national average, and (iii) abrupt rise in employment due to closure. The EDA provides a wide range of assistance, such as grants and loans for public works and development facilities, industrial and commercial loans, and technical, planning and research assistance. In order to deal with regional development problems the EDA has designated "Redevelopment areas", "Economic development districts", and "Economic development centres". A variety of financial assistance is given to create more jobs and increase level of income in these areas and their surrounding areas. It is not necessary that the economic development centres should be located in depressed areas, but they should promote economic development in redevelopment areas.

Thus, like other western industrialized countries, the United States has developed a number of regional development policies to promote growth in depressed areas. The economic development centre approach of the United States, development nuclei approach of the Netherlands, and the development centre approach of West Germany appear to be similar and are based on the concept of growth centre theory. The emphasis of the United States regional development policies on public and human resource investments brings them very close to the concepts of investment theory and the regional development potential theory (Biehl, 1980). It is

interesting to note that like other industrialized countries, the U.S.A. does not have any specific programme for decentralization of manufacturing industries to the rural areas or less developed regions. Hansen has indicated that it is mainly because there has been a spontaneous decentralization of manufacturing industries through the system of cities by an industrial filtering process (Thompson, 1969). However, under the Agricultural Act of 1970 and the Rural Development Act of 1972 there has been a deliberate spatial decentralization of federal offices in the rural areas.

2.3 REGIONAL DEVELOPMENT POLICIES IN CANADA

The Canadian regional development policies, like those of West Germany, France, and the United States of America, have been in effect since the 1960s. However, similar to the United States, there are evidences of some regional policies and programmes that existed as early as 1930s. The best example is the Prairie Farm Rehabilitation Act (PFRA) which was passed in 1935 to assist rehabilitation of farm lands in Manitoba, Saskatchewan and Alberta. Another example is the Maritime Marshland Rehabilitation Act (MMRA) which was passed in 1948. The third example is the fiscal transfers or equalization payments which were introduced during the 1950s. The equalization payments are given to poorer provinces to enable them to maintain a standard of public services closer to the national average.

It is during the early and mid 1960s in which a wide range of regional policies and programmes were introduced by the Canadian federal and provincial governments to alleviate regional disparities across the country. Like other industrialized countries, the main concern of these policies and programmes was to reduce unemployment and raise the level of income in the depressed regions of the country. The most important were the Agricultural and Rural Development Act (ARDA) of 1961, the Atlantic Development Board (ADB) of 1962, the Area Development Agency (ADA) of 1963, the Area Development Incentives Act (ADIA) of 1965, and the Fund for Rural Economic Development (FRED) Act of 1966. The Newfoundland Resettlement Programme, the Atlantic Provinces Power Development Act (APPDA), and the Newstart Programme were the other acts and programmes which came into existence during this period. These policies and programmes were administered by different federal ministries and agencies and, therefore, had little coordination among them. For the purpose of coordination and more effective handling of regional problems, these policies and programmes were consolidated into a newly formed Department of Regional Economic Expansion (DREE) in 1969. These objectives were made clear by the DREE Minister Mr. Marchand:

It is going to be our job to ensure in future, through better co-operation and co-ordination with other departments, that the impact of federal action on regional growth and development is taken into account in all government decisions. Unless this is achieved, at the federal as well as at the provincial level, we cannot adequately serve Cana-

dians everywhere, in the spirit that is essential to our Canadian unity.We are establishing ourselves to work with the provinces (Canada, House of Commons, 1968: 28, 30).

More recently, the Deputy Minister of DREE, Mr. Montreuil, stated that "DREE's role is therefore likely to be an important one, in coordinating federal activities towards achieving the objective of balanced regional growth in Canada" (Montreuil, 1980: 5). At the time of DREE formation, two more programmes were introduced: the Regional Development Incentives Act (RDIA), and the Special Area (SA) programme.

The ARDA, FRED, PFRA, MMRA, and ADB were specially designed to stimulate economic growth and social adjustment in rural areas, whereas the ADA, ADIA, RDIA, and SA programmes were designed to assist other areas in which unemployment was chronically high and income low. Under the ADA, ADIA, and RDIA programmes a number of areas were designated, and various financial assistance was given to secondary manufacturing industries that were newly established, expanded and/or modernized in these designated areas. Between 1963 and 1965 the qualifying manufacturing establishments received three year income tax holidays and accelerated depreciation allowances under the ADA. Between 1965 and 1969 they had the option of receiving capital grants based on capital cost or a tax holiday (this option was removed in 1967) under the ADIA. The capital grants received by qualifying establishments under the ADIA were automatic and not to exceed five million dollars. In 1969 the ADIA programme

was replaced by the RDIA programme in which the capital grants became discretionary and their maximum limit was set to six million dollars. The designated areas also varied during the operation of the ADA, ADIA, and RDIA. Under the RDIA programme a large part of the country is designated (see Figure 1). It is this programme which is the subject matter of the present study. In 1969 DREE established the Special Area programme under which seven categories of Special Areas were designated for infrastructure and industrial incentives assistance. One category of these Special Areas was based on the concept of growth pole theory. In 1973 a review of DREE programmes led to the announcement of multi-dimensional approach or an explicit national strategy for regional development. This strategy consisted of the General Development Agreements (GDAs) and subsidiary agreements which were to be agreed to by federal and provincial governments. The federal share was to range from 50.0 per cent to 90.0 per cent. From 1974 to May, 1979, eleven GDAs and 103 subsidiary agreements were signed with all provinces except Prince Edward Island where a Comprehensive Development Plan has been in effect since 1969 (DREE, 1979). The main purpose of these GDAs and subsidiary agreements was to enable the federal and provincial governments to cooperate in creating long-term employment opportunities in the depressed areas.

The most recent development in the history of Canadian regional development policies is the formation of a new Department of Regional Industrial Expansion (DRIE) and the Ministry of State for Economic and Regional Development (MSERD) (Lithwick, 1982; the Standing Senate Committee (Canada), 1982; the Globe and Mail, 1982). The Prime Minister, Mr. Pierre Trudeau, announced the reorganization of his federal ministries on January 12, 1982. According to this report DRIE is created from bits of the Industry, Trade and Commerce department and the Department of Regional Economic Expansion (DREE). The Ministry of State for Economic Development (MSED) has been renamed as the Ministry of State for Economic and Regional Development (MSERD). MSERD is now going to be a decentralized central agency which will provide a link between regional and sectoral policy efforts. It will place senior directors and staff in each province to coordinate development locally and to minimize red tape on mega-projects. Mr. Trudeau mentioned that the DRIE and the MSERD are expected to be in effect some time in "late winter or in the spring" of 1982. At that time both the ITC and the DREE will expire. He further indicated that as a part of reorganization, the General Development Agreements (GDAs) will also expire and more federal unilateral actions will be taken in these areas. The main arguments in support of the decision to allow the GDAs to lapse were the following: (i)

^a The Globe and Mail. (1982). "Gray Called Loser in Cabinet Rejigging". Wednesday, Januray 13. (Toronto). pp. 1,8.

in spite of putting up large sums of money, up to 90.0 per cent in some provinces, the federal government was getting little or no credit, and (ii) the GDAs required several departmental bureaucracies to agree on projects (the Standing Senate Committee (Canada), 1982). Finally, Mr. Trudeau mentioned that the purpose of these reorganizations is to improve coordination, and to put greater emphasis on regional development efforts. However, Lithwick (1982), and the Standing Senate Committee (Canada, 1982) have criticized this approach and expressed some concerns about the less developed areas.

Thus Canada, like other western industrialized countries, has developed a variety of regional economic development policies and programmes. From time to time, attempts have been made to improve coordination between the federal and provincial governments, and also among federal departments by a number of institutional innovations. However, in Canada there are no explicit organizations, like MKRO of West Germany and ARC of the United States, to facilitate vertical coordination between federal and provincial governments (Brown, Eastman, and Robinson, 1981).

DREE was established in Canada like DATAR in France. It provides coordination between the federal ministries and the provincial governments. However, DATAR, unlike DREE, had limited financial power, whereas DREE was created as an independent department at the federal level with a cabinet

minister, and was given full administrative and financial power to deal with regional problems.

The key element distinguishing the European from the Canadian approach to regional development is that which has been called the "dirigiste" emphasis. Unlike the West European countries, Canada has avoided directing establishments to particular cities or regions. Simply, the RDIA programme responds to applications from industrial establishments for subsidies, and as long as these requests fall within those regions which have been designated, they can be funded. Thus there is no attempt to impose priorities and then to direct these establishments to priority locations. In Canada, it is felt that this leads to an inefficient allocation of resources and there is a constitutional problem. It also discourages private investors who may not accept any Canadian government's attempt to direct investments. A somewhat similar view is expressed by Mr. Montreuil, the Deputy Minister of DREE, that "it is certainly tempting to recommend an element of "dirigisme" in government policy, which would enable regional strategies to achieve more rapid change, for the benefit of those Canadians in most serious need, and at minimum cost. But if "dirigisme" is not an acceptable approach, then it seems clear to me that a regional development thrust which is at least intensively pro-active is needed in the future" (Montreuil, 1980: 12).

Except for the above mentioned differences, the approach adopted by DRBE is similar to West European industrialized economies and the United States. For example, the ultimate goals of its regional policies and programmes are to reduce or eliminate regional disparities in income and unemployment, and to foster regional equity. In a similar way, the RDIA programme attempts to attract manufacturing industries and thus to generate growth in the designated areas by providing investment subsidies and infrastructure facilities. Furthermore, the Canadian ceiling on capital incentive grants of six million dollars is somewhat similar to the Netherlands' maximum value of a subsidy which is three million Dfl. As in West Germany, the incentive grants in Canada are given to new plants as well as to expansion and/or modernization cases, and the amount of incentive grants depends on both the number of jobs and the amount of capital which is to be invested. In Canada, some provinces receive a comparatively higher percentage of incentive grants than the other provinces. Such a practice is similar to that of France. The Canadian policies and programmes are also similar to the United States' regional policies in putting emphasis on the role of human resource investments in regional economic growth. Finally, the Canadian growth centres' (one category of the Special Areas) approach is somewhat similar to the United States' economic development centres, the Netherlands' development nuclei, and West Germany's development centres.

Now the question is: how successful have these programmes been in West European countries as well as in Canada, especially the industrial incentive programmes? In the case of France, Prud'homme has noted that the studies conducted by Falise and Lepas (1970), and Strawczynski (1971) have revealed that "investment subsidies appear to be an important factor in the choice of a location, second only to communications facilities and labor availability. But, according to others (Lamarre, 1972), such subsidies do not play a decisive role in locational decisions" (Prud'homme, 1974: 54). On the basis of his own analysis Prud'homme has concluded that "Some positive results undoubtedly have been achieved. The industrial growth of the Paris region has been halted; outmigrations from the poorer regions have been reduced; income differentials have not increased and have probably decreased. The overall picture is therefore quite favorable" (Prud'homme, 1974: 63).

When dealing with the experience of West Germany, Krumme has reported that "The effectiveness of investment grants as a regional policy measure has been recently questioned by Blake (1972),* admittedly on the basis of limited

* The study conducted by Blake (1972) deals with the standard regions of the United Kingdom. He has concluded that "the effectiveness of the preferential grant as an engine of relocation varied from industry to industry. In two, possibly four, industries it seems to have created new employment in development areas. In three others it may have had a perverse effect, by inducing mainly labour-saving investment in these areas. Its effect in the remaining industries is inconclusive. On balance, it was - on the slight evidence available - probably not worth while"

data. ...For the German scene, various studies have implied that the industrialization of rural areas does not automatically contribute to the regional equalization of income and prosperity due to the low skill and educational requirements for newly created jobs in branch plants of agglomeration-centered corporations, or in firms of stagnating industries which were forced out of the industrial districts" (Krumme, 1974: 134).

It appears from the above examples that the effectiveness of industrial incentive programmes is subject to a great controversy. It may be due to the following difficulties that are involved in evaluating the effects of a programme. For example, (i) a programme's objectives may be influenced by a long-term structural change in process, a short-term variation in trade cycle, migration, and a random event; (ii) it is difficult to discern the impacts of a programme when two parallel programmes are mutually augmenting one another's effectiveness; (iii) there are some time lags between a programme being implemented and its effects; and (iv) a programme's evaluation is constrained by disclosure limitations of relevant information or data (OECD, 1977; Davenport et al., 1982). In order to have some understanding of the effectiveness of industrial incentives programme in Canada, the present study has adopted the following measures. First, it discusses the objectives of the RDIA pro-

(Blake, 1972: 71).

gramme and its practices of providing incentive grants. Second, it outlines other federal-provincial competing programmes. Third, it explains the need for evaluating a programme and presents a general discussion of programme evaluation designs. Fourth, it presents a critical review of the studies which have evaluated the effectiveness of industrial incentives programmes in Canada. Having discussed the procedures and findings of previous studies, it outlines the methodologies that are adopted in the present research to evaluate the effectiveness of the RDIA programme. Finally, the results of this study are discussed. These results are then compared with the RDIA stated objectives and general conclusions are drawn.

2.3.1 The RDIA Programme

2.3.1.1 Objectives of the RDIA Programme

The RDIA programme, which came into effect on July 1, 1969, is the second (after GDAs) major regional development programme of DREE. Its main objectives are to attract secondary manufacturing and processing establishments or private capital investments in the designated slow growth areas, and thus to create more jobs and to change favourably the industrial structure of these areas. For this purpose it provides financial incentives to manufacturing and processing establishments that newly establish, expand and/or modernize in the designated slow growth areas of the coun-

try. These objectives of the programme are clear from the remarks of the first DREE Minister Mr. Marchand. He mentioned that the purpose of the Department and the RDIA programme:

....is to create jobs, eventually to put in place infrastructures and give incentives to build new manufactures and new plants.It is a job oriented department (Canada, House of Commons, 1970: 16).

What is of primary importance though, is to find adequate stimuli to invite the appropriate industries to establish themselves in the poorer areas.It is in this spirit that we will be doing our planning: planning to attract new industries; to stimulate and aid the modernization and expansion of existing industries (Canada, House of Commons, 1968: 29-30).

The RDIA programme has tried to create more jobs in the designated areas. This could have been achieved by favouring labour-intensive industries as opposed to capital-intensive industries. Such a view was expressed by Mr. Marchand before the House of Commons:

Suppose we have two applications from two different companies. One is labour intensive and the other is capital intensive.Probably we will lean towards the labour intensive industry, because this is the very purpose of this law. This law is not there to develop industry as such, per se, but in relation to employment opportunities (Canada, House of Commons, 1969: 294).

Another objective of the programme is to attract industries with strong inter-regional and international export orientations. Implicit in this objective are the concepts of backward, forward and final demand linkages of the regional economy. Such an objective was made clear by the remarks of Mr. Marchand. He noted that "It is necessary to

create industries that will be able to sell a far greater quantity of products to the rest of the country and abroad. If this export of products is realized local market growth will follow" (Canada, House of Commons, 1968: 29).. However, this objective was not examined in the present research because such information was refused by DREE.

These were some of the major objectives of the RDIA programme which have more relevance for the present study. A detailed discussion of the RDIA objectives and goals may be obtained from a report published by DREE (1976a: 7-10). Since the programme's implementation, there is no evidence of a major change in its objectives. This is clear from the remarks of a later DREE Minister Mr. Lessard:

...under RDIA I do not think there is a need for a major reorganization of the act as such. There might be justification for a few minor adjustments that might put the department in a better position to respond to some applicants, but that improvement would be a minor adjustment and not a tremendous improvement really (Canada, House of Commons, 1977: 15).

The present research concentrates on evaluating the success of the RDIA programme in achieving its objectives of changing favourably the industrial structure and stimulating employment growth in the slow growing provinces.

2.3.1.2 The RDIA Incentive Grants

The RDIA programme is active in some specific areas of the country. They are generally called "designated areas". According to DREE reports (1976b, 1981), the RDIA pro-

gramme provides two main types of financial incentives: (i) development incentives, and (ii) loan guarantees. The development incentives are given to manufacturing and processing establishments in three forms: (i) non-repayable, (ii) repayable, and (iii) provisionally repayable. Development incentives are provided to most manufacturing and processing industries that are newly established, expanded and/or modernized in the designated areas. The only exceptions are initial processing operations and certain segments of the pulp and paper industry. It is mentioned in these reports that under this programme certain natural resource processing plants, such as sawmills, fish, and food processing plants are eligible for incentive grants. The loan guarantees are available for manufacturing and processing operations, and for certain new commercial undertakings, such as business offices, warehousing and freight-handling facilities, shopping centres, conventional facilities, hotel and motel accommodations, recreational facilities and research facilities.

It is made clear in these reports (1976b, 1981) that in order to receive incentive grants under the RDIA programme, a project should not only be located in designated areas but also must have an approved capital cost of at least 25,000 dollars. However, in case of a new facility or a new product expansion which creates five direct jobs, the capital cost can be as low as 5,000 dollars. The loan guaran-

tees is made available to only those establishments which have approved capital costs of 100,000 dollars or more.

According to these reports the amount of an incentive grant depends on the following factors: (i) size of establishment, (ii) type of project, (iii) place of location, (iv) the economic contribution to the region, and (v) the financial need of the individual project. For grant purposes three sizes of projects are recognized. The projects with approved capital costs (ACC) of less than 300,000 dollars and fewer than forty direct jobs are called category A or small size. The projects with ACC equal or more than 300,000 dollars but less than two million dollars and direct jobs equal or more than forty but less than 100 are called category B or medium size. The projects with at least two million dollars ACC and 100 direct jobs are called category C or large size. Since April 1, 1974 (DREE, April, 1974: 2) standard formulae are applied to determine the amount of incentives for A and B categories of projects, although exceptions are made in some cases. The standard formulae are based on percentages of the ACC and the average of the approved annual wages and salaries which vary according to the location and type of the project. For example, if a project is located in the Atlantic provinces and is either a new facility or a new product expansion, it receives 25.0 percent of the ACC plus 30.0 per cent of wages and salaries, whereas a new or new product expansion project located in other re-

gions receives only 25.0 per cent of ACC plus 15.0 per cent of wages and salaries. In case a project is involved in modernization or volume expansion and located anywhere in the designated regions, it receives only 20.0 per cent of ACC. For a large project or category C projects the amount of incentive grant is determined by assessing the potential benefits to the region and the needs of the individual project.

Under the RDIA programme the amount of incentive grants is subject to statutory limits. It is mentioned in DREE reports (1976b: 27; 1981: 10) that in the case of modernizations and volume expansions, the development incentive grants may not exceed 20.0 per cent of ACC, or six million dollars, whichever is the lower. However, in case of a new project and a new product expansion, the development incentive grants may not exceed the lowest of the following:

1. 25.0 per cent of the ACC and 5,000 dollars for each direct job created in facility (the initial 20.0 per cent of ACC may not exceed six million dollars);
2. 30,000 dollars for each direct job created;
3. 50.0 per cent of the capital to be employed in the operation; or
4. 80.0 per cent of the ACC for most incentives determined by standard formulae (in case of the garment industry, the maximum is 40.0 per cent).

According to these reports, loan guarantees cannot exceed 90.0 per cent of the total amount of the advances made by the lender. In the case of manufacturing and processing plants the loan guarantees cannot exceed 80.0 per cent of the ACC after subtracting the DREE development grants and the amount of incentive provided by other government agencies.

According to DREE reports, the amount of an incentive grant to a project is not given all at one time or even at the time of offer. About 80.0 per cent of a project's total incentive grant is paid after it has been in commercial production for thirty days and is in compliance with the terms and conditions of the programme. The remaining 20.0 per cent is paid within thirty months in case of modernization and volume expansion, or within forty-two months in cases of new plants and new product expansions; but not before twenty-four or thirty-six months respectively.

2.3.2 Other Federal-Provincial Programmes

Although the RDIA programme is fostering industrial development and creating jobs in the slow growth areas of the country, there are some other federal and provincial departments, agencies, corporations and programmes which provide competing incentives and thus promote also industrialization. Wenaas (1976) has reported that the provincial governments are involved in a variety of activities for attracting new establishments or expanding and modernizing ex-

isting ones. The most important among these activities are the provision of direct financial assistance, such as the granting of loans, guaranteeing of company bonds, the purchase of company equity capital, the provision of grants, and the reduction of taxes and resource royalties. He has further noted that, in addition to these, the provincial governments are involved in providing technical and advisory services, the building of industrial parks and the subsequent lease of the facilities to industrial firms, the building of factories and their sale to industrial firms, establishment of joint private-public companies, the direct operation of industries by means of provincial Industrial Crown Corporations (ICCs), and the construction of access roads. For carrying out these industrial development activities and assistance programmes, the provincial governments have established the ministries of industry, Industrial Development Corporations (IDCs) or Crown Corporations (CCs), and research councils. The best examples are Industrial Development Corporation (IDC) of Quebec; Saskatchewan Economic Development Corporation (SEDCO) and Saskatchewan Industrial Accommodation Programme (IAC); Manitoba Development Corporation (MDC), and Incentive Programme for Industry (IPFI); Nova Scotia Resource Development Board (RDB), and Industrial Estates Limited (IEL); Prince Edward Island Industrial Enterprises Incorporated (IEI); and New Brunswick Development Corporation (NBDC), and New Brunswick Industrial Finance Board (NBIFB). At the federal level the most important is

the department of Industry, Trade and Commerce (ITC). ITC has a number of programmes to stimulate industrial growth in Canada. The most important are Programme to Enhance Productivity (PEP), Industrial Design Assistance Programme (IDAP), Enterprise Development Programme (EDP), Defence Industry Productivity Programme (DIPP), and Industrial Development Bank (IDB). In 1974 the IDB was succeeded by Federal Business Development Bank (FBDB). Manpower and Immigration is another federal department which provides incentives to Canadian industries through its Canada Manpower Industrial Training Programme (CMITP). The other federal corporations or programmes of industrial development are the Canada Development Corporation (CDC), the Cape Breton Development Corporation (CBDC), the Multiplex Corporation (MC), the Newfoundland and Labrador Development Corporation (NLDC), the Atlantic Development Board (ADB), and the General Development Agreements (GDAs).

The CBDC, MC, NLDC, ADB and GDAs as well as the RDIA are all administered by DREE. In theory, their function is not to compete with the RDIA programme but rather to complement it. Except for these, all other provincial and federal departments, corporations, agencies and programmes provide parallel industrial incentives and sometimes they compete with the RDIA programme. A classic example was cited by the Prime Minister Pierre Trudeau and senior government officials and developed over the choice of a location for a

Volkswagen factory. DREE (under the RDIA programme) wanted the plant to be located in Quebec, whereas the ITC wanted that plant to be located in Ontario. In order to improve coordination at federal level Mr. Trudeau announced the creation of a new Department of Regional Industrial Expansion (DRIE) on January 12, 1982. However, there are no proposals, as yet, for improving coordination at the federal-provincial level (Brown, Eastman and Robinson, 1981). It is believed that with the assistance of federal-provincial agencies and programmes, other than the RDIA programme, some manufacturing establishments may have established, expanded and/or modernized in the slow growing provinces. They may have some impact on changing the industrial structure and stimulating employment growth in these provinces. It is to be noted that because of the unavailability of data, their impact is not examined in this study. One major implication of this limitation is that it would be difficult to determine the importance of RDIA programme as compared to other federal-provincial programmes. However, the examination of only the RDIA assisted establishments would certainly reveal the following: (i) how the RDIA programme resources were allocated among the slow growing provinces as well as among the various industries, (ii) what was the impact of this allocation on changing the industrial structure and stimulating the employment growth of a province, and (iii) whether the resources allocated to a province were sufficient enough to bring about employment growth.

2.4 EVALUATION OF THE RDIA PROGRAMME

2.4.1 The Need for Programme Evaluation

By definition a programme consists of a set of inter-related elements which aim at achieving major goals at the national, sectoral or regional level. Programme evaluation examines the degree to which the programme objectives are achieved. In other words, what has happened as a result of the programme's implementation? If the examination is carried out after the completion of the programme, it is called "ex-post" evaluation. If it is carried out at regular intervals during the programme action period, it is called "on-going" evaluation.

In the context of any evaluation the basic questions that come to mind are the following: why does one need to evaluate the programme? What is the purpose of a programme evaluation? Treasury Board has noted that a programme evaluation is needed "in order to improve policy decisions...., program evaluation...will lead to a better understanding of the achievements of programs, thereby enhancing the ability of the government - departments, central agencies, and the cabinet - to allocate resources in a more effective manner" (Treasury Board, 1981: 3-4).

Thus the purpose of a programme evaluation may be varied. It is noted by Canadian International Development Agency (CIDA, 1977: 21) that a programme evaluation may be

crisis oriented, in which case the emphasis is given on whether a programme should be continued, discontinued, expanded or modified. CIDA has further indicated that a programme evaluation may also be done for the purposes of accepting or rejecting the approach or theory of a programme, verifying its performance, adding or dropping its specific strategies and techniques, improving its practices and procedures, and measuring its effects on the growth and development of a region. It is this last objective which is the purpose of the present study.

2.4.2 The Nature of Evaluation Designs

An important issue in a programme evaluation is the choice of evaluation design. In this context it is necessary to know what types of evaluation designs are available, and what are their advantages and disadvantages. It is up to the evaluator to select a design. The design that is selected will depend upon the nature of research, availability of funds, time and data. The most commonly used evaluation designs are classified by CIDA (1977: 55-61) into the following five types: (i) retrospective study of a target group, (ii) two-group retrospective study, (iii) before-and-after study of a target group, (iv) partly controlled or time-series design, and (v) fully controlled design.

The retrospective study of a target group is a less expensive and simple design. It examines the condition that exists during the programme action period (see Figure 2 (i):

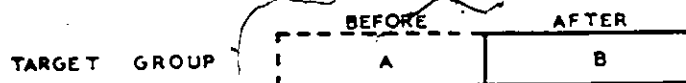
Cell B). In this design there is neither the provision of a controlled group nor measuring conditions before the programme implementation, such as baseline data (Cell A). Consequently, it is difficult to compare the results and to determine the effectiveness of the programme.

It is noted by CIDA that two-group retrospective study is also a less expensive and simple design. It is an improved design in that there is a control group (Figure 2 (ii): Cell D) along with the target group (Cell B). It examines the conditions of the target group as well as the control group and compares the results in order to determine if there are any significant differences. The manual produced by CIDA has further noted that this design assumes that the differences that now exist between B and D are solely due to the programme's implementation. The basic weakness of this design is its assumption that the two groups (B and D) were similar before the programme was implemented. Similar to the previous design, it does not have baseline data (Cells A and C) and, therefore, it is difficult to compare the results.

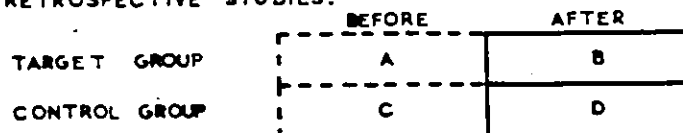
The before-and-after study of a target group is a better design than the two previous ones, because it measures the conditions both before the start of a programme (Figure 2 (iii): Cell A) and also after its completion (Cell B), and thus facilitates the comparison of results. It is noted by CIDA that this design assumes that the dif-

FIGURE 2: PROGRAMME EVALUATION DESIGNS

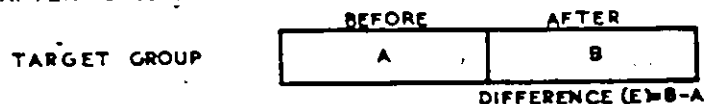
i. RETROSPECTIVE STUDY OF A TARGET GROUP:



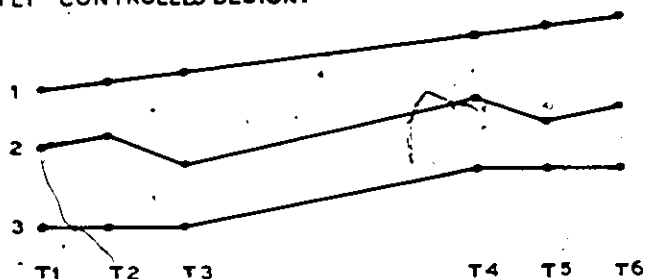
ii. TWO-GROUP RETROSPECTIVE STUDIES:



iii. BEFORE-AND-AFTER STUDY OF TARGET GROUP:

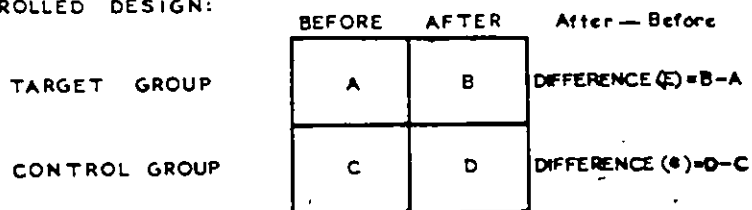


iv. TIME-SERIES OR PARTLY CONTROLLED DESIGN:



THE CHANGE FROM X TO Y CAN BE ATTRIBUTED TO THE PROJECT ONLY IN CASE NUMBER THREE

v. FULLY CONTROLLED DESIGN:



SOURCE: CIDA (1977)

ferences ($B-A = E$) between A and B are entirely the result of the programme's implementation. However, there is a possibility that the differences, to some extent, may have resulted from other factors or programmes. Furthermore, this design does not have a control group which makes it difficult to determine the degree of programme effectiveness. CIDA (1977) has pointed out that this design is most appropriate in situations where other factors or programmes have very limited influence on the expected differences between A and B.

The partly controlled design is also called time-series design. It requires a series of measurements at periodic intervals before the programme started and also after it was completed. These measurements help to decide whether there is a continuation of earlier patterns or whether there is a significant change that can be attributed to the programme. In Figure 2 (iv): case number 1 shows uniform trends, and so there appears to be little impact of the programme. Case number 2 shows some fluctuations before the programme started and also after it was completed. This pattern makes it difficult to determine the impact of the programme. In case number 3 there appears to be a significant change that occurred since the programme was implemented. This change could be attributed to the programme effects.

The fully controlled design's results are valid because this design consists of both the baseline data and the controlled group (Figure 2 (v)). It measures the conditions of the target group as well as the controlled group both before the start of the programme (Cells A and C) and also after its completion (Cells B and D). It compares the differences (E) of the target group with those (e) of the controlled group which was supposed to have characteristics similar to that of the target group at the time of the programme's implementation, but was unaffected by the programme. If there are significant differences between E and e, it means that the programme has been effective in changing the characteristics of the target group.

Thus each evaluation design has some merits and some limitations. It is indicated by CIDA that the retrospective studies of a target group, and the before-and-after study of a target group are highly preferred by managers and researchers because they cost less, consume a small amount of time, and are easy to apply, whereas the partly controlled, and fully controlled designs have less appeal for managers and researchers because they are expensive, more time consuming, and difficult to apply. In the context of the present study the before-and-after design is the only one which is applicable and is discussed in greater detail in Chapter III.

2.4.3 The Evaluation of Previous Studies

To date, there are a few published empirical studies of the effectiveness of Canadian regional policy - especially as they relate to ADIA's and RDIA's capital incentive grants. Some of those studies which deal with the RDIA programme (Yeates and Lloyd, 1970; APEC, 1971; Springate, 1972, 1973; DREE, 1973; Usher, 1974, 1975; and Woodward, 1974a, 1974b, 1975) are briefly reviewed and their findings are presented below.⁷

Yeates and Lloyd (1970) analyzed the impact of industrial incentives on Southern Georgian Bay region of Ontario. These industrial incentives were made available to Southern Georgian Bay region under the Area Development Incentives Act (ADIA) of 1965 which was administered by the Area Development Agency (ADA). The study area included the counties of Bruce, Grey, Dufferin, and Simcoe. The time period covered was from 1964 to August 1967. The data was obtained from secondary sources as well as from direct interviews with companies. Out of the 426 companies interviewed, 405 were considered suitable for the analysis. The assessment of the economic impact of the ADA programme was undertaken in both descriptive and quantitative terms. The quantitative part of analysis was concerned with an estimation of the employment multiplier effect of the ADA programme and

⁷ The research works of Dudley (1974), Atlantic Development Council (1976), and Economic Council of Canada (1977) also deal with the RDIA programme, but are not discussed in this study.

linking the impact of this programme to changes in the tertiary sector of economic activity. After analyzing data in detail this study concluded that:

The ADA program in the designated area can be considered highly successful. In the short term, it has generated a massive increase in regional investment, a sharp rise in regional wage levels and personal incomes, and a significant improvement in the regional export base.A major lesson to be learned is that an incentives program basically concerned with aiding the flow of manufacturing capital to capital-short areas can be very successful where there are signs of incipient economic growth (Yeates and Lloyd, 1970: 64-65).

This work is an "ex-post" evaluation which examines the impact of ADIA programme on the growth and development of Southern Georgian Bay region. Since this work is based on a large sample, its results may be reliable. However, the main criticism that can be leveled against this work is the use of an evaluation design in which there are no provisions for a controlled group and baseline data for comparing the results of the programme's effectiveness.

The Atlantic Provinces Economic Council (APEC, 1971) conducted a mail survey of firms which had accepted incentive grants under the RDIA programme as of March 31, 1971. Only the new establishments, which were located outside the Atlantic region, were asked to answer brief questionnaires. RDIA assisted establishments located in the Atlantic region were asked to answer a more detailed questionnaire. Of the 196 establishments located outside the Atlantic region, 98 replied, of which 91 replies were worthy of analysis. Similarly, of the 133 establishments in the Atlantic region, 73

replied. The results of this survey were reported in the Fifth Annual Review of the APEC (1971: 68-72). It was concluded that

91.2 per cent of the replies from firms receiving DREE grants for projects outside the region did not consider a location in the Atlantic provinces.Of the regional firms surveyed concerning the RDIA program, 57.5 per cent indicated that the size of their expansion or new facility was affected by the availability of a grant and 49.3 per cent said the timing of their project was affected by the availability of a grant (APEC, 1971: 72,97).

This work may be classified as "on-going" evaluation of the RDIA programme. Its purpose seems to underline the importance of the RDIA programme in influencing the location, size, and timing of manufacturing establishments. It is purely descriptive and does not examine the economic impact of these establishments as such. The research methodology, relying as it does on a mail survey, can result in biased "after the fact" interpretation.

Springate (1972, 1973) investigated the effects of the RDIA programme on the investment decisions of firms. For this purpose thirty-one firms, which had received incentive grants under the RDIA programme as of September 1971, were selected. Of the thirty-one firms, eighteen were large companies with annual revenues above twenty million dollars. Senior-level executives, who were responsible for the investment decisions of these firms, were interviewed. The investigation was mainly directed towards the effects of incentive grants on the location decision, timing, size and technology of plants. Springate's studies revealed that:

There is some geographic movement of the investment of large companies into designated regions as a direct result of incentive grants. But such movement is small and seems to be confined to relatively few firms.For many companies in our large company sample (eight of thirteen) there was no locational effect on the siting of new facilities. Rather, the site was chosen without being influenced by potential federal grants.If the only types of large company cases where significant locational effect was observed tend to be those associated with marginal projects or international placement of investment.Other influences on the timing of investment, the size or the technology used are virtually nil.In the smaller companies, the chief effects relate to...size changes or acceleration of project timing.Significant location effects are small and were found related only to starting companies where funds were made available in one centre but not another. While grants have more influence, as a proportion of cases, with small companies than with the investments of large companies, again a large proportion (approximately one-half) of the grant offers accepted produce no significant effects on the investment and result in a windfall gain for management (Springate, 1972: 183-185, 287-288).

Springate's study may also be classified as "on-going" evaluation of the RDIA programme. It appears that this work was conducted for purpose of accepting or rejecting the approach or theory of the programme. The reliability of Springate's findings has been questioned by DREE (1973: 44-45) on two grounds. First, they are based on a very small sample (about two per cent of net accepted offers and three per cent of jobs). Second; they are based on informal, and subjective interviews in which there is every possibility of getting biased information. DREE (1973: 45) has argued that it is difficult to discern biased information from such interviews. This work can also be criticized on

the basis of its evaluation design in which there are no provisions of a controlled group and baseline data for comparing the results of the programme effectiveness.

An attempt was made by DREE (1973) itself to examine the impact of the RDIA programme in attracting manufacturing investments and employment to the slow growth areas of Canada. This examination was conducted in terms of four incrementality categories: (i) location option, (ii) size change, (iii) timing change, and (iv) viability threshold for the period 1969-1972. A total of 329 sample projects were selected. They comprised over fifty per cent of both total commitments and expected jobs under the RDIA programme. They were classified into two groups: (i) those which had a locational option in a non-designated region, and (ii) those which did not. This classification was based on natural resources and market factors. According to DREE, if a project used natural resources and less than two-thirds of its production was for sale outside the region, it was classified as not having a locational option. If a project did not use natural resources or if it used natural resources and more than two-thirds of its production was for sale outside the region, it was classified as having a locational option. The projects having locational options were assumed to be 100 per cent incremental to the region. Having set the criteria, DREE requested its provincial offices to classify the accepted offers into the above mentioned four in-

cremental categories. The following facts were revealed by

DREE:

...projects with location options comprise 58.5 per cent of the grants accepted, 43.3 per cent of direct jobs to be created and 63.1 per cent of fixed assets.Only 20 per cent of the jobs created by projects classified as having size or timing changes were considered to be incremental. Similarly, it was estimated that 2/3 of the jobs resulting from "viability threshold" cases are incremental.RDIA assisted investment is estimated to be almost 80 per cent incremental, associated jobs are estimated to be 70 per cent incremental and the value of grants supporting incremental projects and jobs represents 78 per cent of the total. This means that 70 per cent of the jobs being supported by the RDIA program would not be created in the absence of the program. Similarly, over three quarters of the grants relate to investment which would not have occurred without the program (DREE, 1973: 41-42).

The DREE study was certainly an "on-going" evaluation of its RDIA programme. It was conducted for the purpose of verifying programme performance and improving its practices and procedures. However, Gillespie and Kerr (1977: 28) have criticized this study for its research methodology. They have argued that the choice of natural resource and market factors is based on arbitrary assumptions and lacks a theoretical framework. While estimating the incrementality, this study does not take into account the "crowding-out" effects. Like the other studies mentioned above, this one also suffers from a lack of any provision of a control group and baseline data for comparing the results of the programme's effectiveness.

Usher (1974, 1975) tried to evaluate the effects of the ADIA and the RDIA programmes on investment and employment growth. For this purpose he collected two sets of data on manufacturing investment and employment. The first set of data was related to all manufacturing industries, while the second set was related to only those of the ADIA and RDIA programmes. Both sets of data were time-series (on annual basis) for the period 1961-73. He made a comparison between these data sets to see whether there is a continuation of earlier pattern or a significant change which can be attributed to these programme effects. He argued that:

...comparing the trends of manufacturing investment in Quebec, the Maritime provinces, and the rest of Canada and knowing nothing of the regional incentive program, one would not guess that that investment in the designated regions was being stimulated on anything like the scale of the A.D.I.A. and R.D.I.A. programs. ...The statistics of 'jobs created' under the RDIA program are subject to the same biases as statistics of investment namely that if the subsidy to a particular investment is redundant, then the jobs created by that investment cannot be attributed to the Regional Development Incentive Act for they would have been created in any case. (Usher, 1974: 38; 1975: 567).

The evaluation design adopted by Usher is called "time-series" design. It is a better design than those adopted by above mentioned studies. However, it requires a fairly large number of periodic measurements before a programme starts, during the period it is active, and after it is completed. It should be noted that Usher covered a very short period of the RDIA programme operation. In such a situation it is difficult to draw any firm conclusion.

Woodward (1974a, 1974b, 1975) conducted a series of studies into the effectiveness of incentive grants, but his subject matter was slightly different from the above mentioned studies. He examined the impact of RDIA grants on corporates' expenditures for capital and labour. He found that:

...location subsidies offered by the Department of Regional Economic Expansion (DREE) under the Regional Development Incentives Act (RDIA) were shown to favour corporate expenditures on capital more than on labour. In particular, the DREE subsidies lowered the costs of capital by a greater per cent than they lowered the cost of labour (Woodward, 1974a). Moreover, such a capital bias in a microeconomic model of a firm was demonstrated to be inconsistent with the RDIA goal-employment in depressed regions.DREE fails to achieve the greatest number of jobs, and incurs a higher cost per new job created (Woodward, 1975: 217-18, 229).

Woodward's studies are based on well established principles of the substitution of factors of production. He has found that the RDIA grants have encouraged the substitution of capital for labour. However, since the incentive grants are also given on basis of number of jobs to be created and the designated regions in general have abundant labour, there is possibility that some firms may have opted for labour-intensive industries. Woodward has not considered this aspect.

Thus it is observed that the evaluation designs adopted by previous researchers are of the "retrospective study of a target group" type. The results of such an evaluation design are not of great validity because there are no baseline data and provisions for a control group. In such a

situation it is difficult to compare the results and determine the programme's effectiveness. The present study, as opposed to previous ones, has adopted an improved evaluation design. It is called "before-and-after study of a target group". This design is applied in the present study in a modified form and incorporates the use of shift and share, and regression analysis. The format of this evaluation design is discussed in the next chapter. The main purpose and utility of this design is to analyze and compare the industrial structural changes and differential employment growth of the RDIA programme period with those of the base period, to identify significant differences, and to determine the impact of RDIA programme in bringing about such differences.

Chapter III

RESEARCH METHODOLOGY AND EVALUATION DESIGN: A FRAMEWORK FOR EVALUATING THE RDIA PROGRAMME'S EFFECTIVENESS

This chapter begins with a discussion of shift and share analysis. The chapter, first, notes the important studies which have applied shift and share technique to measure change in industrial structure and regional patterns of growth, and discusses only Canadian studies. Second, it outlines the empirical contents of this technique and notes its important shortcomings. Third, it presents a brief discussion of regression analysis and crossstabulation. It then provides a concise outline of the evaluation design that was adopted for this study. Finally, it examines the data-base and points out the problems that were encountered during the compilation and arrangement of the data.

3.1 RESEARCH TECHNIQUES INCORPORATED IN EVALUATION DESIGN

3.1.1 Shift and Share as a Technique of Measuring Change in Industrial Structure and Regional Patterns of Growth

The Application of Shift and Share in Other Studies:

There are many studies which have used shift and share technique to analyze the change in industrial structure and re-

gional patterns of growth. The most relevant are by Fuchs (1959), Dunn (1960), Perloff et al. (1960), Ashby (1965), Steed (1967), Stilwell (1969), Buck (1970), Lasuen (1971), Paraskevopoulos (1974a, 1974b), Edwards (1976), and Andrikopoulos (1977, 1980). The majority of these studies selected either manufacturing employment or industrial employment to analyze the change in industrial structure and regional patterns of growth. The only exception was Fuchs (1959) who selected both manufacturing employment and value added. Most of these studies limited themselves to a sector level analysis in which they examined the growth performance of various regions. The studies of Dunn (1960), Lasuen (1971), Edwards (1976), Andrikopoulos (1977), and Steed (1967) were exceptions in that the analyses were carried out at both the sector level and the disaggregated level. The former four limited themselves to either a one-digit or two-digit industry breakdown, whereas Steed (1967) carried out his analysis at the three-digit breakdown of industrial classes.

A detailed literature survey also revealed that, to date, there were only three studies to the author's knowledge, which have analyzed the Canadian regional patterns of growth in manufacturing employment (Paraskevopoulos, 1974b; Edwards, 1976; and Andrikopoulos, 1977). In order to familiarize ourselves with the subject matter, a brief discussion of these studies and their findings are presented below.

Paraskevopoulos (1974b) analyzed the patterns of manufacturing employment growth in Canada. This analysis was based on two occasional reports^a of the Dominion Bureau of Statistics (1969, 1971). These reports provided in detail the shift and share components of employment change in manufacturing by provinces and counties or census divisions for two time periods: 1949-1959 and 1961-1967. On the basis of two components - industrial-mix and regional-share - a four-fold classification of regional employment change was presented. For example, the first category represented an area in which both industrial-mix and regional-share were positive. The second category represented an area in which industrial-mix was positive but regional-share was negative. The third category represented an area in which the industrial-mix was negative but regional-share was positive. The last category represented an area in which both industrial-mix and regional-share were negative. These four categories of counties were classified for Canada as a whole, and for the province of Ontario, Quebec, and Maritime provinces individually. In order to determine the changes in the industrial structure, the classification was carried out sepa-

^a The Dominion Bureau of Statistics (1969, 1971) published two occasional reports entitled "Growth Patterns in Manufacturing Employment by Counties and Census Divisions". The time period covered by the first and second occasional reports were 1949-1959/1961-1965 and 1961-1967 respectively. These reports were based on shift and share analysis. The manufacturing employment data used in these reports excluded head office employees and was average for the calendar year.

rately for two time periods: 1949-1959 and 1961-1967. The main findings and conclusions of this study may be summarized as:

Changes in the industrial structure during the two periods indicate a substantial improvement in the fast growing areas in the nation..... The number of rapid-growth counties (category 1) has been increased from 16 in the first period to 29 in the second period with a net-gain of 13 counties. In the same period the number of counties classified as 'lagging' or 'depressed' (category 4) has been increased from 48 to 53 with a net gain of 5. This suggests that the gap between the 'have' and 'have not' areas has widened over the period studied..... Ontario is the most dynamic region in the nation..... Quebec exhibited a growth pattern almost the opposite to that of Ontario..... The growth pattern in the maritime provinces shows a moderate improvement.

In conclusion, the utilization of the 'shift and share' method in regional economic analysis can be of assistance to the policy maker, such as the Department of Regional Economics Expansion (DREE), in at least two ways: in evaluating the success of regional economic policy and in helping for formulating sound economic policies (Paraskevopoulos, 1974b: 123-125).

Using shift and share technique, Edwards (1976) analyzed changes in the British Columbia's industrial structure during the 1961-1970 period. The analysis was carried out for the ten census regions within that province, and for the twenty major groups of manufacturing industries by year. The sections dealing with changes in manufacturing employment at the provincial and the census region levels were based on the occasional publication of Statistics Canada (1973). The sections dealing with annual changes in manufacturing employment of British Columbia were based on Ed-

wards' own analysis. The analysis carried out at a disaggregated level revealed how the sub-categories of manufacturing industry contributed to British Columbia's growth performance, whereas the analysis carried out at the sub-regional level indicated how the ten census regions were performing within the provincial economy. The findings of this study may be summarized as:

From 1966 onwards there was marked deterioration in the employment growth pattern.In the net relative change component, ten of the twenty sectors experienced negative balances and the wood and food industries were especially prominent in this respect.During the ten year period 1961-70 British Columbia suffered from a negative industry-mix component as a result of an economy dependent upon slow growth or declining industries or industries dependent upon world demand.The Boudeville classification system suggested that three of the ten census regions within the province (regions 2, 7 and 9) might need to be considered for particular economic planning assistance although only one of these three is currently receiving benefits together with neighbouring regions 1 and 3 (Edwards, 1976: 311-312, 316-317).

Andrikopoulos (1977) analyzed the manufacturing employment growth in the province of Ontario for the period 1961-1973. The data used in this analysis were manufacturing employment at a two-digit SIC breakdown. He applied the shift-share model to identify three growth components: (i) national growth, (ii) industrial-mix, and (iii) regional-share. He then formulated two basic hypotheses: (i) the regional-share hypothesis, and (ii) the industrial-mix hypothesis. First, he postulated that "the regional-share hypothesis relates the industry's regional-share component of

employment to four basic sets of regional factors: region's economic condition and market-size, agglomeration economies, capital formation, and the "share" variable" (Andrikopoulos, 1977: 47). Second, he assumed that "the industrial-mix component of employment should be affected either by policy manipulated variables - that is variables that could inject fast growing industries in the province in order to compensate for their above average of declining industries...and/or variables exogenous to the region - that is national variables affecting demand and supply" (Andrikopoulos, 1977: 49). In order to test these hypotheses, he regressed the regional-share component and the industrial-mix component against the selected explanatory variables. On the basis of these results, he came to the following conclusions:

...relative wage rates, relative unemployment rates, relative income, ...the distribution of infra-structure investment, ...market-size, industrial distribution of capital, agglomeration economies, and the share variable for the province of Ontario as a whole are fairly good explanatory factors of the province's regional-share component. ...the industrial-mix hypothesis...suggests that structural deficiencies in the province can be rectified by policies acting either on the regional distribution of capital (local infra-structure investment, natural resource policies, etc.), or on changing the region's economic conditions (money wage policies, improving skills of labor, etc.). These policies may induce the expansion of already fast growing industries in the province and/or the establishment of new promising firms in the industry. ...government policies attempting future regional development should be directed towards those factors that can either alter the regional distribution of capital and/or change the comparative position of the region. The present analysis provides, we think, enough support and new evidence concerning the shift-share model and

its usefulness in explaining and therefore predicting regional economic growth. (Andrikopoulos, 1977: 58-60).

It is to be noted that out of the three Canadian case studies, two of them were based on prosperous provinces, i.e. Ontario and British Columbia. The study conducted by Paraskevopoulos (1974b), although it analyzed the patterns of growth in Ontario, Quebec, and the Atlantic region, was based on manufacturing sector level analysis. It did not analyze the structural changes in Quebec and Maritime provinces at a more disaggregated level of industrial breakdown. It can be concluded, therefore, that there are no studies which have analyzed in detail the regional economy of the slow growing provinces of Canada.

The Application of Shift and Share in the Present Study: Unlike the previous studies, the present research analyzes in detail the regional economies of the slow growing provinces of Canada. The shift and share analyses were carried out at both the sector level and at a more disaggregated level, i.e. four-digit SIC codes, of manufacturing industry, for the 1961-69 period as well as for the 1970-78 period. The sector level analysis revealed: (i) how the provinces were performing in the national context, (ii) what were the causes of their rapid or slow growth, and (iii) which provinces were the most troubled ones and needed special regional development policy? The disaggregated level analysis revealed: (i) how the sub-categories of manufactur-

ing industry were performing in a province, (ii) what were the causes of their rapid (or slow) growth, (iii) which industries were responsible for rapid (or slow) growth of a province, (iv) which industries had a favourable (or unfavourable) industrial mix effect in a province, and (v) which industries had a differential growth advantage (or disadvantage) in a province? Finally, the shift and share results of the 1970-78 period were compared with those of the 1961-69 period. Significant differences in industrial structural change, and the differential employment growth of the slow growing provinces were then identified.

3.1.2 The Empirical Contents of Shift and Share Technique

The idea of shift and share analysis was first conceived by Creamer (1943), but was fully developed and enlarged by Dunn* (1960). For Creamer it was a technique of intra-regional analysis. He used this technique for describing the locational shift of each industry in a region. Dunn modified this technique for inter-regional analysis. He applied this technique to explain regional or subregional economic growth performance in a national-regional system or regional-subregional system. Since early 1960s this technique has been used to analyze both sectoral and regional economic growth or change. It is interesting to note that in

* Fuchs (1959), and Lichtenberg (1960) were the other contemporary scholars who also developed and used shift and share techniques. These techniques were somewhat similar to Dunn but not exactly the same.

most cases the sectoral and regional economic growth or change are analyzed in terms of employment or value added. There are only two cases known to the author, in which they are analyzed in terms of population (Paris, 1970), and gross domestic product (Norrie and Percy, 1981). Its use as a forecasting technique is also well documented (Brown, 1969, 1973; Greenberg, 1972; James and Hughes, 1973; Floyd and Sirmans, 1973, 1975; Hellman, 1976; Hewings, 1976; Herzog and Olsen, 1977, 1979; and Stevens and Moore, 1980). Thus it is evident that this technique has a wide application for regional analysis.

The empirical content of this technique is well documented in the works of Fuchs (1959), Dunn (1960), Ashby (1964, 1970), Stilwell (1969), Buck (1970), Paris (1970), Herzog and Olsen (1977), and Richardson (1979) and is, therefore, not discussed in this study. However, in order to facilitate the understanding and interpretation of this study's results, a brief introduction to its main features, and analytical framework is provided.

For the purposes of this study, the shift and share technique and its notations are taken from Stilwell (1969) and Richardson (1969). This technique decomposes the growth or change of a regional variable, such as employment, into the following three effects or components (Stilwell, 1969):

1. National growth (NG).

2. Industrial mix or proportionality shift (IM).¹⁰
3. Differential growth or differential shift (DG).¹¹

National Growth (NG): This component measures the growth that results from the national growth effect; that is, if the regional manufacturing industries had grown at precisely the same rate as the national manufacturing industry. Algebraically it may be expressed as:

$$NG_{ij} = E_{ijo} (E_t / E_o) - E_{ijo} \quad (1)$$

Where

E_{ijo} is employment in manufacturing industry i in region j in the base year.

E_t is employment in all manufacturing industries in all regions in the terminal year.

E_o is employment in all manufacturing industries in all regions in the base year.

Industrial Mix (IM): This component accounts for employment growth in a region that results from its industrial composition at the beginning of the study period. It is

¹⁰ Industrial mix, industrial composition, industrial structure, and proportionality shift are used as synonyms in the text.

¹¹ Differential growth, differential shift, and regional-share are also used as synonyms in the text. At certain places the term "differential growth advantage" is used for positive differential growth, and "differential growth disadvantage" for negative differential growth.

noted by Stilwell that if a region has an above average proportion of national slow-growing industries, it will experience a negative industrial mix. Conversely, if a region is specialized in national fast-growing industries, it will experience a positive industrial mix. Andrikopoulos (1977) notes that the industrial mix thus should be affected by a government policy that is trying to inject growing industries in a region to compensate for that region's above average proportion of declining industries. It may also be affected by the national demand and supply conditions. Algebraically industrial mix effect may be expressed as:

$$IM_{ij} = [(E_{it}/E_{io}) - (E_t/E_o)] E_{ijo} \quad (2)$$

Where:

E_{it} is employment in manufacturing industry i in all regions in the terminal year.

E_{io} is employment in manufacturing industry i in all regions in the base year.

The rest of notations are the same as mentioned above.

Differential Growth (DG): This component measures employment growth in a region that results from differential growth of employment in its industries; that is, faster or slower than their national counterpart. A positive differential growth results when industries in a region either grow more rapidly or decline less rapidly than their nation-

al counterpart. A negative differential growth results when industries in a region either grow less rapidly or decline more rapidly than their national counterpart. According to Stilwell (1970) and Andrikopoulos (1977) the differential growth can be interpreted as resulting from the following: (i) a government policy that is providing incentive grants to attract private investment, create new jobs, and increase access either to inputs or markets, (ii) comparative advantages (i.e. low cost of raw materials, energy, transportation and labour, nearness to market, well developed infrastructure, and agglomeration economies), (iii) availability of local demands (size of market), and (iv) the multiplier effects of other local developments. When these factors are present in a province, the similar industries may grow faster in that province than elsewhere in Canada, and thus the province may experience positive differential shift. This study examines the impact of only one government policy (i.e. the RDIA programme) on the differential employment growth of the slow growing provinces. Algebraically it may be expressed as:

$$DG_{ij} = E_{ijt} - [(E_{it}/E_{io})E_{ijo}] \quad (3)$$

Where:

E_{ijt} is employment in manufacturing industry i in region j in the terminal year.

The rest of notations are the same as mentioned above.

Net Total Shift (TS): It is to be noted that the algebraic sum of the three growth components of shift and share analysis is equal to the ~~absolute~~ growth or change in employment of a region during the period studied (that is, total employment in all manufacturing industries of a region in the terminal year minus total employment in all manufacturing industries of that region in the base year = NG + IM + DG). Similarly, algebraic sum of industrial mix (IM) and differential growth (DG) components represents net total shift. It measures growth in employment that results from the combined effects of industrial mix and differential growth components. The net total shift (TS) may be expressed as:

$$TS_{ij} = (IM_{ij} + DG_{ij}) = E_{ijt} - [(E_t/E_o)E_{ijo}] \quad (4)$$

Where:

All notations are the same as mentioned above.

Modification to Standard Shift and Share Technique:

An examination of equations 1 to 4 reveals that all weights are based on the industrial structure at the beginning of the period. This point was noted by Fuchs (1959), Dunn (1960), Thirlwall (1967), and Stilwell (1969). Stilwell has pointed out that the standard shift and share technique does not account for the changes in industrial structure that may

have taken place during the period studied. In order to take into account such changes, he has suggested the following three modifications to the standard shift and share technique:

1. Reversed proportionality shift (RP).
2. Proportionality modification shift (PM).
3. Residual differential shift (RD).

Reversed Proportionality Shift (RP): This component measures the employment growth in a region that results from its industrial composition existing at the end of the period under consideration. Algebraically it may be expressed as:

$$RP_{ij} = [(E_o / E_t) - (E_{io} / E_{it})] E_{ijt} \quad (5)$$

Where:

All notations are the same as mentioned above.

Proportionality Modification Shift (PM): This component measures the employment growth in a region that results from the region having modified its industrial mix during the period under consideration. A positive PM indicates that the region has increased its specialization in national "growth" industries. Conversely, a negative PM indicates that the region has increased its specialization in national "declining" industries. The proportionality modification shift (PM) is obtained by subtracting the industry mix effect

(IM) from the reversed proportionality shift (RP). Algebraically it may be expressed as:

$$\begin{aligned} PM_{ij} &= RP_{ij} - IM_{ij} \\ &= [((E_o/E_t) - (E_{io}/E_{it}))E_{ijt}] - [((E_{it}/E_{io}) - (E_t/E_o))E_{ijo}] \end{aligned} \quad (6)$$

Where:

All notations are the same as mentioned above.

Residual Differential Shift (RD): This component, similar to the differential growth (DG), also measures employment growth in a region that results from differential growth of employment in its industries; that is, faster or slower than their national counterpart. However, it does not take into account the employment growth resulting from proportionality modification shift (PM). It is obtained by subtracting proportionality modification shift (PM) from the differential growth (DG). Algebraically it may be expressed as:

$$\begin{aligned} RD_{ij} &= DG_{ij} - PM_{ij} \\ &= TS_{ij} - (IM_{ij} + PM_{ij}) \\ &= TS_{ij} - RP_{ij} \\ &= [E_{ijt} - ((E_t/E_o)E_{ijo})] - [((E_o/E_t) - (E_{io}/E_{it}))E_{ijt}] \end{aligned} \quad (7)$$

Where:

All notations are the same as mentioned above.

Thus the shift and share technique is a statistical procedure which summarizes information concisely. The components of this technique do not measure the growth or change in absolute terms, but in relative terms. Since the sum of all positive and negative shifts in a nation is zero, the sign and magnitude of each shift indicates the effect of growth or change in each region relative to the nation.

Shift and share technique is used in this study to analyze the changes in industrial structure and growth in employment of the slow growing provinces of Canada. A detailed literature survey has revealed that it is a popular technique for such type of analysis. The main reasons for its popularity are its simple data requirements, and the ease in calculation and comprehension. The technique, however, has certain limitations which are widely discussed in the works of Dunn (1960), Houston (1967), Steed (1967), Mackay (1968), Brown (1969), Buck (1970), and Randall (1973). These studies have identified the following weaknesses of this technique.

Controversy exists on its theoretical content which is extensively discussed in sources like Stilwell (1970), Hellman (1976), Chalmers and Beckhelm (1976), Berzeg (1978), and Andrikopoulos (1977, 1980). Houston's (1967) objection is that shift and share technique does not provide a theoretical explanation of differential growth in a region. In response to this objection Stilwell has mentioned that this

is valid so long as its proponents argue that it does. He has further noted that "shift and share is not of itself a theory of regional growth, it does integrate fairly well with some, but not all, of the established theories. ...it...is...as an ancillary device rather than as an attempt to describe growth process" (Stilwell, 1970: 453).

Mackay (1968) has pointed out that shift and share technique is based on the assumption that proportionality shift and differential shift are independent. Thus, this technique does not take into account the industrial linkage and other multiplier effects. It is argued by Nagarajan (1980) that industrial linkage will cause an under-estimation of proportionality shift. In such a situation proportionality shift can be regarded as the minimum estimate of industrial composition effect.

Another criticism leveled at shift and share technique is that its results vary depending upon industrial breakdown. Buck (1970) had demonstrated that at the Order level of industrial classification this technique produces larger differential shift and smaller proportionality shift, whereas at the Minimum List Heading (MLH) level of industrial classification it produces smaller differential shift and larger proportionality shift. In the case of a further industrial breakdown leading up to the firm level, it produces zero differential growth. Thus "the finer the better" concept, as suggested by Dunn, cannot be accepted. For the

purpose of this study, between the two extremes, the industrial breakdown at the MLH (i.e. four-digit SIC codes) is considered to be reasonable.

It is pointed out that because of fluctuations in business cycles, the choice of initial and terminal years of the period under observation has some bearing on the results of shift and share analysis. In this respect it is argued that since all measurements are done relative to the national growth rate, the results of shift and share may not be distorted unless there is too much variation between regional and national business cycles. However, this possibility is not examined in the present study.

It is noted by Dunn that the shift and share technique does not take into account the changes in industrial structure during the period under consideration, because the weighting of all its components is based on the industrial composition at the beginning of the period. Therefore, the longer the time period, the higher the distortion in the proportionality shift effect. Since the total time span of eighteen years (1961-1978) is equally divided into two nine year periods (1961-69 and 1970-78), this would not be a problem in case of the present study. Secondly, in order to take into account the changes in industrial structure during the periods under consideration, a modified shift and share technique (as suggested by Stilwell, 1969) is applied in this study.

3.1.3 Regression Analysis and Crosstabulation

Regression Analysis: Another statistical technique used in this study is regression analysis. It provides the direction and strength of relationship between a dependent variable (Y) and a set of independent variables (X_1 , X_2 , ..., X_n), the estimated values of a dependent variable (Y), and also indicates how much of the variation in a dependent variable (Y) is explained by the joint linear influences of independent variables (Xs). The direction and strength of relationships are revealed by its simple coefficient of correlation or r. The sign of r indicates the direction of relationship, whether positive or negative, while the absolute value of r shows the relative strength of the relationship. The value of R square or coefficient of determination indicates how much of the variation in a dependent variable is accounted for by the joint influences of independent variables. The value of regression coefficient or B indicates the expected change in Y which a change of one unit in X produces. The actual algorithm of regression analysis is not discussed in this study because the computation is done by computer using the "subprogram regression" of Statistical Package for the Social Sciences (SPSS, 1970, 1979).

For determining the degree and direction of the RDIA programme effectiveness in stimulating differential growth of employment, the expected new jobs are considered as independent variable (X) and the differential growth of employ-

ment (DG)¹² as dependent variable (Y). A total of seven regression analyses are performed, one for each of the slow growing provinces. The results of these analyses are discussed in the next chapter.

Crosstabulation: This procedure provides a joint frequency distribution of cases according to two or more classificatory variables. The actual algorithm of crosstabulation, similar to that of regression, is not discussed in this study because the computation is done by computer using the "subprogram crosstabs" of the SPSS (1970, 1979). This procedure is applied in the present study to examine the distribution patterns of RDIA assisted establishments. It produced a series of tables which are discussed in Chapter IV.

3.2 THE EVALUATION DESIGN ADOPTED IN THIS STUDY

The evaluation design selected for the present research is the modified before-and-after study of a target group. It is applied in this study for the following purpose: (i) to examine industrial structural change in the slow growing provinces during the 1961-69 period in which there was no RDIA programme as well as for the 1970-78 period in which the programme was implemented, (ii) to identify significant differences in the industrial structural change as well as in the differential employment growth by means of

¹² The values for differential growth are obtained from shift and share analysis.

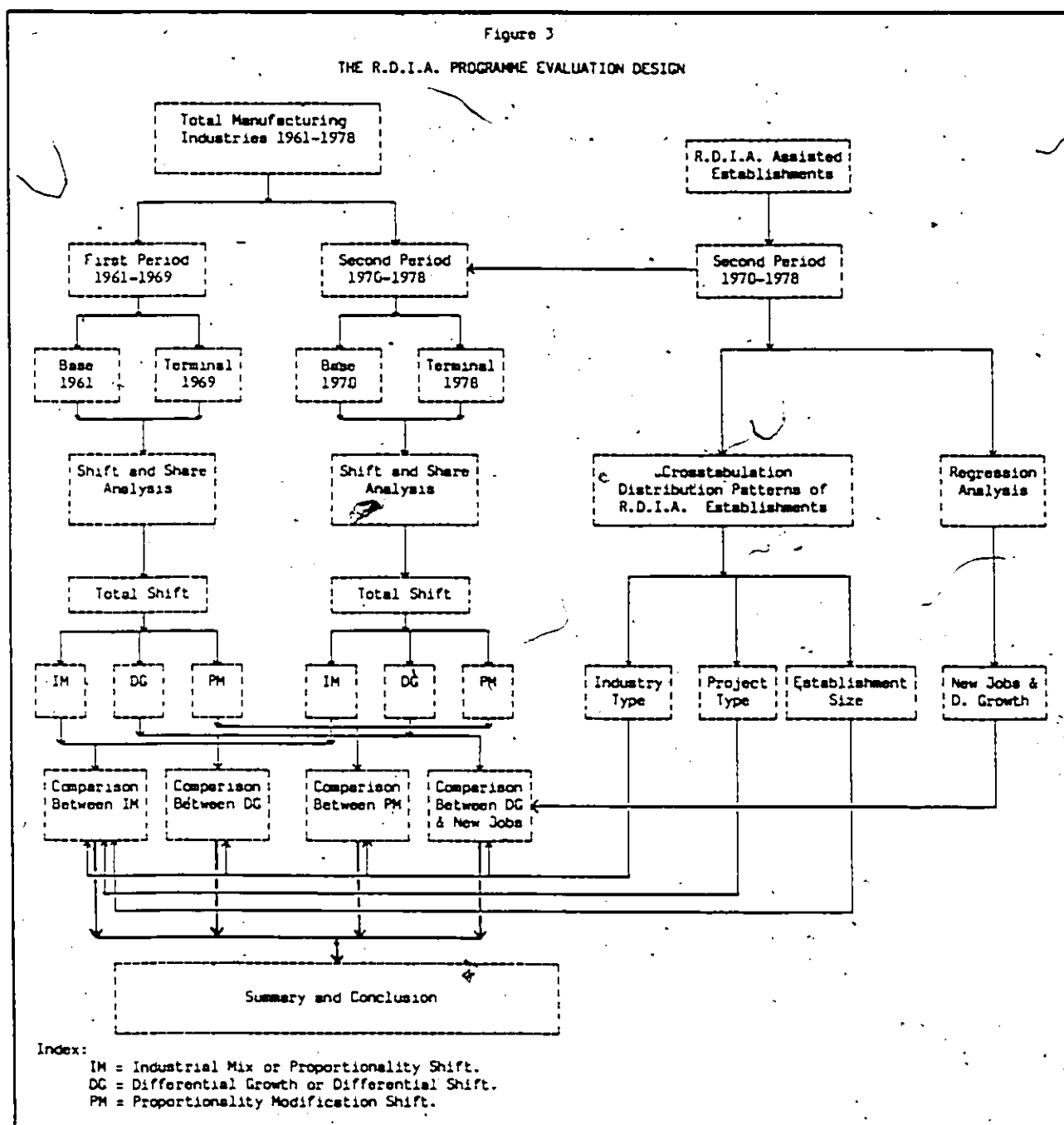
comparing the results of the 1970-78 period with those of the 1961-69 period, and (iii) to determine the impact of RDIA programme in bringing about such industrial structural changes as well as in stimulating differential employment growth in the slow growing provinces, and hence fulfilling its objectives. According to the explicit assumption of this design, these differences are solely the result of the RDIA programme. However, there is a possibility that these differences may have occurred due to other competing programmes or factors. At this point the real problem is to determine which developments are due to the RDIA programme and those which are due to other programmes. This could have been easily determined if data for other competing programmes were available and there was a control group. In absence of a control group and data for other competing programmes, the RDIA assisted establishments (a subset of the 1970-78 period) are examined to determine the extent to which these differences are the result of the programme (see Figure 3).

In order to carry out this evaluation task, manufacturing employment and value added data were collected for two time periods: (i) 1961-69, and (ii) 1970-78. The first period represents before conditions or baseline data which are unaffected by the RDIA programme initiation. The second period shows the after conditions or target data which are supposed to be affected by the programme's implementation.

In order to examine the patterns of industrial structural changes and differential employment growth, shift and share analysis was carried out separately for the first period and for the second period at the sector level as well as at a more disaggregated level, i.e. four-digit SIC, of manufacturing industries (see Figure 3, the left hand side). On the other hand, for determining the impact of RDIA programme on the structural change and the differential employment growth, first, crosstabulations were produced at the sector level as well as at a more disaggregated level of manufacturing industries, and, second, the differential employment growth (again at four-digit SIC) was regressed against expected new jobs to be created by RDIA assisted establishments (see Figure 3, the right hand side). The crosstabulations revealed the distribution of RDIA grants among the slow growing provinces as well as among types of industries (i.e. national growth industries, national declining industries), types of projects (i.e. new plants, new product expansion, expansion, modernization), and size of establishments (i.e. small, medium, large) within the province. It is this type of analysis which can help in explaining structural changes and differential employment growth of a province. For example, a significant improvement in the industrial structure of a province may be the result of (i) a very high proportion of grants provided to national growth industries which did compensate for the above average proportion of national declining industries, (ii) a very high

proportion of grants given to new plants and new product expansion which may have been put easily in the direction of changing patterns of demand, or the vast majority of which were in the national growth sectors for which demand was expanding, and (iii) a very high proportion of grants offered to small and medium sized establishments which tend to be innovative, indigenous, and more jobs creating, or the vast majority of which were in high technology and national growth sectors for which demand was expanding. Having analyzed the structural changes, differential employment growth, and the distribution of RDIA grants, the following procedures were adopted to determine the impact of RDIA programme in changing the industrial structure and stimulating differential employment growth of a province.

As shown in Figure 3, the shift and share results of 1970-78 period were compared with those of 1961-69 period, and significant differences in net employment growth (total shift) of a province were identified. This difference may have resulted from some change in its industrial composition (industrial mix effect), proportionality modification shift, and differential growth. In case the industrial mix effect and the proportionality modification shift were responsible for such difference, an attempt was made to determine whether it was because of the pre-existing industrial structure, and/or the RDIA programme. At this point the distribution patterns of RDIA assisted establishments were examined to provide evidence (see Figure 3). For instance, in a prov-



ince, if a significant improvement in the industrial structure (high positive industrial mix effect) was associated with a very high proportion of grants in national growth industries, it can be said that, to some extent, this improvement in the industrial structure may have resulted from the RDIA programme which injected national growth industries in the province.

In case the differential growth effect was responsible for such difference, an attempt was made to determine whether it was because of the RDIA programme, and/or other factors. At this point also the distribution patterns of RDIA assisted establishments were examined to provide evidence (see Figure 3). For example, in a province, if national growth industries had a comparative advantage (positive differential growth) in a province and had received a very high proportion of grants, it may be indicative of the fact that the RDIA programme was successful in allocating its resources to the industries which were doing well in the province, and thus the programme may have stimulated differential employment growth in that province. Furthermore, the differential growth in employment of the recipient industries was regressed against the new jobs to determine the degree and direction of association between them, and thus to assess the success of the programme. Finally, the standardized residuals were examined to investigate other possible factors affecting the differential employment growth in the province.

Thus, on the basis of these analyses and comparisons, general conclusions were drawn about the effectiveness of the RDIA programme in changing the industrial structure and stimulating differential employment growth in a province.

3.3 EVALUATION OF THE DATA BASE

In order to analyze the patterns of change in industrial structure and employment growth, data on manufacturing employment and value added were obtained from Statistics Canada, Manufacturing and Primary Industries Division. The alternative sources of these data were "user supplied computer tape" (public tape), and "Manufacturing Industries of Canada: National and Provincial Areas" - Catalogue No. 31-203 annual.¹³ Because of the confidentiality provisions of the Statistics Act,¹⁴ these sources did not contain employment and value added data for each and every detailed industrial disaggregation (i.e. the four-digit SIC codes). An attempt was made to overcome this problem by obtaining user specified tabulations from Statistics Canada. Although Statistics Canada provided the data in the form of four-digit SIC codes, they were slightly modified, i.e. a new indus-

¹³ This annual volume is published under various names since 1961. Between 1961 and 1968 it was called Manufacturing Industries of Canada, while between 1969 and 1971 it was called General Review of the Manufacturing Industries of Canada. From 1972 onwards it was entitled as Manufacturing Industries of Canada: National and Provincial Areas.

¹⁴ For the confidentiality provisions of the Statistics Act see Statistics Canada (1978), Catalogue No. 31-203 Annual, pp. XVI - XVII.

trial category code was added to the file (SIC 9998). It contained the aggregated data for (i) all industries for which disclosure limitation existed, (ii) the industries having zero values in either the initial or terminal year of the period studied, (iii) the new industries that were introduced during the period covered, and (iv) the industries for which provincial employment was accounted for by a single firm. This procedure facilitated the calculation of shift and share statistics not only for non-confidential industries, but also for confidential industries (hereafter called the grouped industries) in aggregated form. This, however, was at the cost of a loss of detailed information. Quebec, with its broad industrial base, was the province least affected by this procedure. Conversely, Prince Edward Island, with a narrow industrial base, was the province most affected. The other provinces were moderately affected by this procedure. This loss in detailed information was acceptable on three grounds. First, it was desirable to obtain detailed data coverage but the confidentiality provisions of the Statistics Act made this impossible. Second, in most cases the proportion of total employment accounted for by the grouped industries was not very large; e.g. in 1978 the grouped industries of Quebec accounted for only 12.0 per cent of its total employment (see Table 1). Third, it was anticipated that an overall performance of the grouped industries might indicate its importance and provide

some insight for future research. Thus the sources of data used in this study were the best available.

The employment and value added data used in this study were for total activity.¹³ Before being included into final analysis they were arranged in ascending order according to the four-digit SIC codes. For the 1961-69 period a total of twenty-six data matrices were prepared, two for each province, region, and territory. Of the twenty-six data matrices, thirteen were based on employment, and another thirteen were based on value added. In the same fashion a total of twenty-six data matrices were prepared for the 1970-78 period. Thus for both periods, a total of fifty-two data matrices were prepared and included in the shift and share analysis.¹⁴ Each data matrix had a dimension of m industries by n years of employment or value added.¹⁵ In the

¹³ The total activity employment includes manufacturing production and related workers as well as administrative, office and other non-manufacturing employees. Similarly, the total activity value added includes value added by manufacturing activities as well as other related non-manufacturing activities.

¹⁴ Although shift and share ratios were calculated for Ontario, Alberta, British Columbia, and the territories, they were not discussed here, as this study limited itself to the slow growing provinces of Canada. The main purpose of analyzing these provinces and territories was to have an overall idea of their performance in comparison of the slow growing provinces. The statistical details of these provinces may be provided upon request.

¹⁵ The "m" or number of industries varied from one province to another mainly because of differences in their industrial base and the confidentiality provisions of the Statistics Act. The "n" or number of years equaled four: i.e. provincial - (i) initial year, and (ii) terminal year employments; and the national (Canadian) - (iii)

Table 1

Distribution of Manufacturing Industries by Province

I Province	II NTI 1978	III NNCI 70-78	IV %ENCI 1978	V NGI 70-78	VI %EGI 1978
1. Quebec	168	127	88.0	41	12.0
2. Newfoundland	68	6	72.2	62	27.8
3. Manitoba	146	50	61.3	96	38.7
4. New Brunswick	117	17	52.7	100	47.3
5. Nova Scotia	107	23	45.8	84	54.2
6. Saskatchewan	105	16	43.3	89	56.7
7. Prince Edward Is.	41	3	38.8	38	61.2

Index:

- NTI = Number of Total Industries Reported in 1978.
 NNCI = Number of Non-confidential Industries: 1970-78.
 NGI = Number of the Grouped Industries: 1970-78.
 %ENCI = % of 1978 Employment in Non-confidential Ind.
 %EGI = % of 1978 Employment in the Grouped Industries.

first of these periods the industry definitions were that of the 1960 SIC revision (see Appendix B), whereas in the second period they were based on the 1970 SIC revision (see Appendix C). While preparing data matrices, the most detailed industrial disaggregations (i.e. the four-digit SIC codes) were used, except in a few cases where the three-digit SIC codes^{1*} were used to retain comparability of industry definitions for the period concerned.

The "Monthly Report to Parliament on Regional Development Incentives" was the source of data on establishments which had received RDIA subsidies. Its main purpose is to provide parliament with up-to-date information on the operation of the programme. It contains summary statistics for all establishments from the inception of the programme until the end of the month in question. It also contains a detailed listing of essential facts (e.g. name of company, plant location, product or process, type of project, expected eligible cost, expected direct new jobs, and estimated amount of incentive) for each accepted offer during that month. For the 1970-78 period a total of 108 monthly re-

initial year, and (iv) terminal year employments for a particular time period.

^{1*} The industries for which the three-digit industry definitions were used are SIC 2540, 3050, and 3990. The SIC 2541, 2543, and 2544 were grouped as SIC 2540. The SIC 3051, and 3059 were grouped as SIC 3050. The SIC 3991, 3992, 3993, 3994, 3996, 3998, and 3999 were grouped as SIC 3990. Although the number of industries varied from one year to another, there were 169 four-digit manufacturing industries reported for Canada in 1978, but after grouping done, there were 160.

ports were obtained from DREE. The data contained in these reports were coded in computer readable form for easy handling and the carrying out of subsequent statistical analyses. While coding data the accepted offers were arranged in ascending order according to the month and year of their acceptance.¹¹ For example, the accepted offers in January 1970 were entered first, followed by those accepted in February 1970 and so on. In this way an input file was prepared for the 1970-78 period, which consisted of 6,079 accepted offers.¹²

At the time of the preparation of the input data file, a few problems were encountered. The monthly reports did not contain numeric codes for products or processes, types of project, plant location, and the accepted offers that had been declined. This problem was overcome by assigning numeric codes. The revised Standard Industrial Classification Manual of 1970 (Catalogue No. 12-501E) was used to assign the four-digit SIC codes for the products or processes. In the case an establishment produced more than

¹¹ In each monthly report the accepted offers were arranged in alphabetical order according to the name of companies. This order was maintained.

¹² According to DREE (1979k) there were 6,077 accepted offers during the 1970-78 period, but according to my input file there were 6,079 offers. This difference was due to the fact that the Sidbec company, having three different types of projects at three locations, was considered three separate offers instead of one. Of the 6,079 accepted offers, 943 offers were subsequently declined or withdrawn, thus there were 5,136 net accepted offers during the 1970-78 period.

one product or process, it was assigned the SIC code according to the first product or process reported in the monthly report. In some cases it was difficult to assign an SIC code, because the names of products or processes reported were uncommon and were not found in the revised SIC Manual. This problem was overcome by checking the names from the detailed lists of the SIC manual and the Industrial Commodity Classification (ICC) manual which were obtained from Statistics Canada. When reporting the offers accepted and subsequently declined or withdrawn, it was found that only the name of companies, plant location, and the date of previous report were listed. This method of reporting created problems in five pair of cases which had the same company name and same plant location. Here the basic problem was to decide which one of the paired cases declined or withdrew. In such a situation the one case which was listed first was considered to be declined or withdrawn. Another problem associated with this method of reporting related to the date previously reported. There were six declined or withdrawn cases which were not found in the monthly report of the date mentioned. An attempt was made to overcome this problem by contacting the industrial incentives branch of DREE. One of the officials of DREE mentioned that sometimes the name of a company and even the plant location are changed after they are reported in a monthly report. The up-to-date file contains only the latest information and so it is very difficult to trace out those six declined cases. In such a situ-

ation there was no other choice, except to include those six cases into the category of net accepted offers. At this point the most likely question was to what extent the inclusion of these cases was going to affect the results. It was thought that the results would not be significantly affected because these were very few in number. Except for these, there were a few minor problems associated with printing errors. These problems were again resolved by consulting the industrial incentives branch of DREE.

Before proceeding with the analysis an attempt was made to check the input data file against other reports of DREE. The correspondence between these data and those of DREE was remarkably close.²¹ The data on eligible cost, direct new jobs, and amount of incentive used in this study are expected or estimated at the time when the offers were accepted. They are not the actual or approved data at the time of project completion.²² A formal request was made to

²¹ Minor differences may be found between the cumulative statistics for net accepted offers of this study and that of DREE. One obvious reason is the inclusion of six declined cases into the category of net accepted offers. Second, the cumulative statistics presented in this study are based on the original monthly reports from January 1, 1970 to December 31, 1978, whereas those of the DREE are based on time to time adjustments which recognize the difference between expected at time of offer and actual at time of project completion.

²² It may be possible that at time of project completion the eligible cost, direct new jobs, and amount of incentive have materialized as expected or may have materialized in either reduced amount or increased amount. This study has taken into account the expected values as reported in the monthly reports, not the actual values, as such data were not provided by DREE.

DREE for providing information on actual number of jobs created, the number of projects completed as of December 31, 1978, the percentage of local resources utilized by an assisted project, the percentage of output sold outside the province, the ownership of a project, the number of males and females employed in the project, and their wage and salary. Although most of this information was contained in the master file of DREE, it was not provided.²² Under these limitations, the data used in this study were the best available.

²² In response to my request for data, the Minister of DREE gave two reasons for not providing data - confidentiality, and the cost involved.

Chapter IV

PATTERNS OF STRUCTURAL CHANGE AND EMPLOYMENT GROWTH: SOME EMPIRICAL EVIDENCE OF THE RDIA PROGRAMME'S EFFECTIVENESS

This chapter discusses the empirical results and tries to explain the changes in industrial structure and employment growth of a province in light of its past industrial development and the federal government policy measures, especially the RDIA programme. It examines the structural changes and growth in shift/share terms; that is, net total shift, proportionality shift (industrial mix), differential shift (differential growth), and proportionality modification shift. The structural changes and differential employment growth are examined at both the manufacturing sector level and the disaggregated level (four-digit SIC codes). The examination at the sector level provides a general idea of the province's performance in the national context. However, it hides some important information. For example, a negative differential shift at the provincial level conceals positive differential growth in some sub-categories of manufacturing industry. The examination at a disaggregated level overcomes this problem and enables one to identify the following: (i) the sub-categories which were responsible for rapid or slow growth of the province, (ii) the allocation of

RDIA grants among these categories, and (iii) their performance in the province.

Order for the Presentation of Results: The chapter consists of seven sections, one for each province included in this study. Each section examines the pattern of net employment growth (total shift) in a province during the 1961-69 period as well as the 1970-78 period. The section then identifies the significant employment growth differences between the first and the second periods, which may have resulted from the combined effects of industrial mix (proportionality shift), differential growth (differential shift), and proportionality modification shift, or due to one of the three growth components. In those cases where the industrial mix effect and the proportionality modification shift are responsible for such differences, it tries to determine whether this resulted from the pre-existing industrial structure or whether it was the RDIA programme which injected a number of manufacturing industries in the province. In those cases where the differential growth is responsible for such differences, it attempts to determine whether this is because of the RDIA programme or the result of some other factors such as comparative advantages, population migration, local developments, and other federal-provincial policies and programmes (i.e. General Agreement on Tariffs and Trade, implementation of quota system, and tax reduction). Finally, it provides an overall view of the

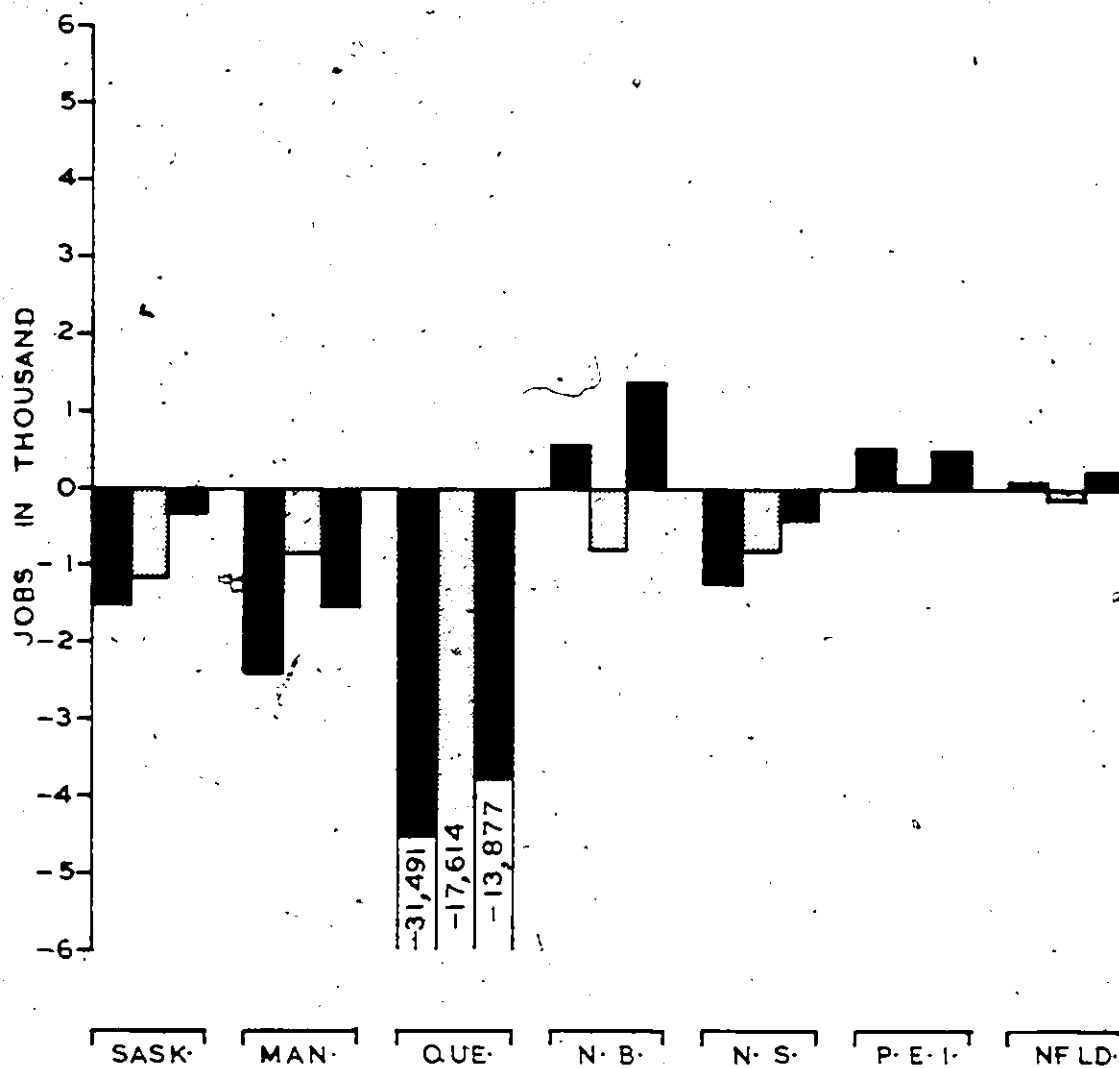
RDIA programme's effectiveness in changing the industrial structure and stimulating differential employment growth in a province.

Data Considerations: Before actual analysis of individual provinces, it is important to mention a few problems that are associated with the data. When discussing the structural changes and employment growth at disaggregated level of manufacturing industries, it is rather surprising to see very few numbers of industrial categories, especially in the case of Prince Edward Island. For example, there are only two groups of industries for the 1961-69 period (Table 5-A), and only four groups of industries for the 1970-78 period (Table 5-B). In fact, there was a much higher number of industries in the province. In 1978 Prince Edward Island had forty-one industrial categories for which employment data were reported (see Table 1). Of the forty-one, the employment data for thirty-eight industries were confidential or were not reported either for the initial year or the terminal year of the period 1970-78. Since the individual data for these industries cannot be made public, they were aggregated and shown under one group; that is, the "grouped industries". The shift and share statistics were calculated before being aggregated to overcome the aggregation problem that arises in shift and share calculations. Thus the "grouped industries" category shows the overall performance of the thirty-eight industrial categories and thus masks the

performance of individual industrial categories. If these had been known, it would have been much easier to identify the impact of the RDIA assisted establishments on the economy of Prince Edward Island. Similarly, confidentiality was a major problem in the case of other provinces which have a narrow industrial base, i.e. Maritime provinces. This, however, appears to be a common problem for all economic researchers, as evidenced by comments made by George (1970), and Edwards (1976).

In the present study, value added was included as a supplement for explaining the patterns of regional growth. Its inclusion was considered necessary because an examination of regional growth in terms of employment may give an erroneous impression. For instance, a region specializing in labour-saving-high productivity industries may show poor performance in terms of employment growth, but might well experience faster economic growth, when measured on a value added basis. However, a comparison of results at the sector level revealed that during the second period a majority of slow growing provinces experienced net inward shifts (positive total shifts) in manufacturing employment which were proportional in scope to those occurring when value added totals were used (see Column III of Tables 2-A, 2-B, 3-A, 3-B as well as Figures 4-A, 4-B, 5-A, 5-B, net total shift). The only exceptions to this pattern were Prince Edward Island and New Brunswick which experienced net outward shift

FIGURE 4-A: PATTERNS OF EMPLOYMENT GROWTH
IN RDIA DESIGNATED AREAS BY PROVINCE:
1961 - 69



LEGEND



FIGURE 4-B: PATTERNS OF EMPLOYMENT GROWTH
IN RDIA DESIGNATED AREAS BY PROVINCE:
1970-78

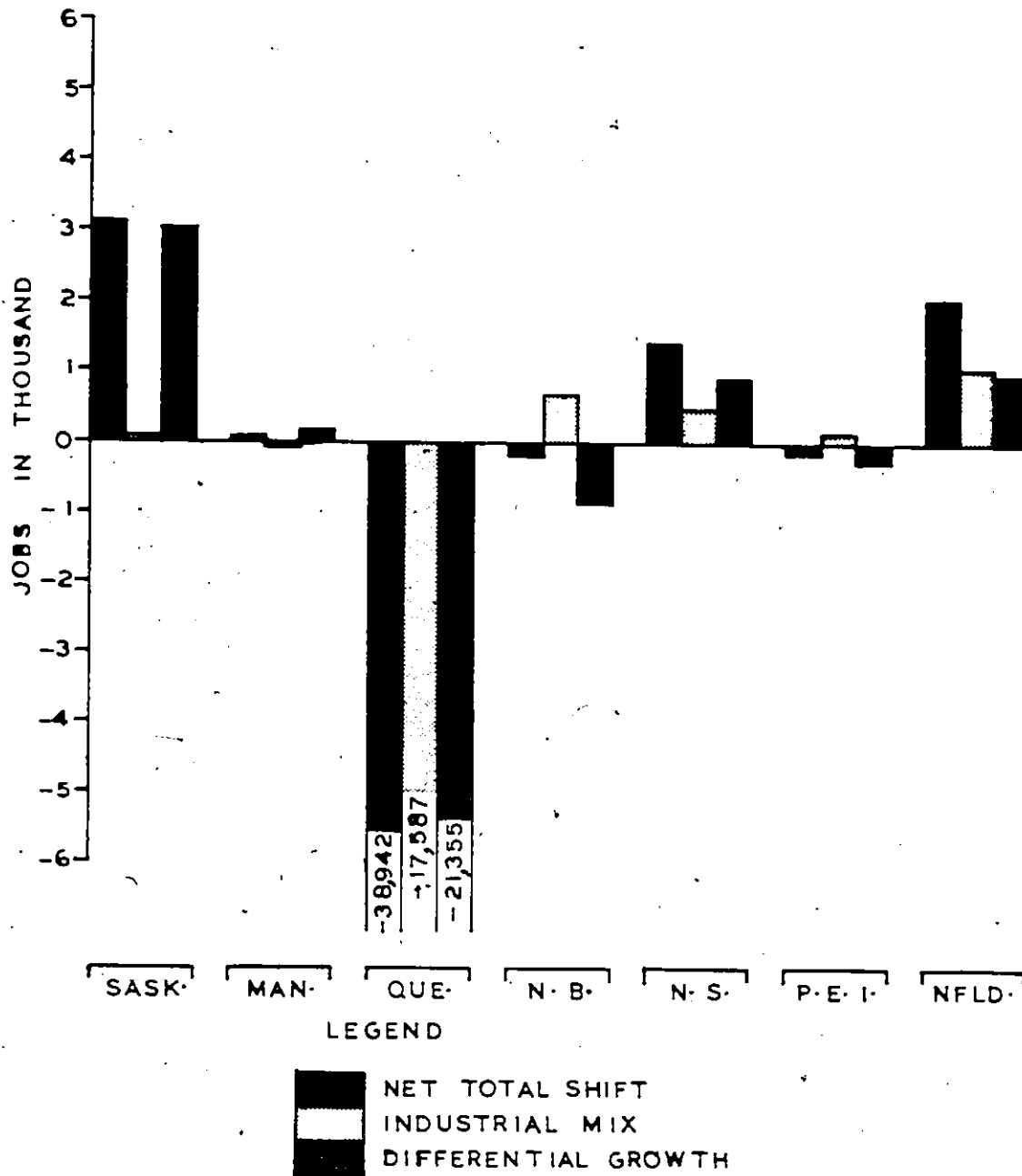


Table 2-A

Patterns of Employment Growth by Province and Region: 1961-69

I Province/Region	II NG	III IS	IV IM	V DG	VI PM	VII RD
1. Newfoundland	+2351	+97	-115	+212	+134	+78
2. Prince Edward Is.	+401	+524	+19	+505	+1	+503
3. Nova Scotia	+6638	-1231	-817	-414	-140	-274
4. New Brunswick	+5471	+581	-805	+1385	+67	+1318
A. Atlantic Region	+14862	-30	+69	-99	+22	-121
B. 5. Quebec	+107975	-31491	-17614	-13877	+2379	-16256
C. 6. Ontario	+152405	+34300	+36710	-2411	-10431	+8020
7. Manitoba	+9987	-2404	-857	-1546	-101	-1445
8. Saskatchewan	+3234	-1522	-1188	-334	+296	-630
9. Alberta	+9523	+2918	-792	+3709	+314	+3395
D. Prairie Region	+22744	-1008	-69	-939	-340	-598
E. 10. British Columbia	+24706	-1803	-4907	+3104	+1378	+1727
Territories	+35	+32	0	+32	0	+32
CANADA	+322727	0	0	0	0	0

Index:

NG=National Growth.
 IS=Net Total Shift.
 IM=Industrial Mix or Proportionality Shift.
 DG=Differential Growth or Differential shift.
 PM=Proportionality Modification Shift.
 RD=Residual Differential Shift.

Table 2-B

Patterns of Employment Growth by Province and Region: 1970-78

I Province/Region	II NG	III IS	IV IM	V DG	VI PM	VII RD
1. Newfoundland	+1210	+2044	+1056	+988	+52	+936
2. Prince Edward Is.	+254	-171	+116	-287	-90	-197
3. Nova Scotia	+2990	+1417	+495	+922	-116	+1038
4. New Brunswick	+2702	-186	+698	-884	-439	-445
A. Atlantic Region	+7155	+3105	+2960	+145	-389	+534
B. 5. Quebec	+48321	-38942	-17587	-21355	+3569	-24924
C. 6. Ontario	+75809	-1641	+13049	-14690	-2828	-11862
7. Manitoba	+4578	+73	-87	+160	-164	+324
8. Saskatchewan	+1382	+3130	+97	+3033	+135	+2898
9. Alberta	+4824	+17514	+871	+16643	-41	+16684
D. Prairie Region	+10784	+20717	+444	+20274	-171	+20444
E. 10. British Columbia	+11756	+16772	+8081	+8691	-701	+9392
Territories	+23	-11	0	-11	0	-11
CANADA	153848	0	0	0	0	0

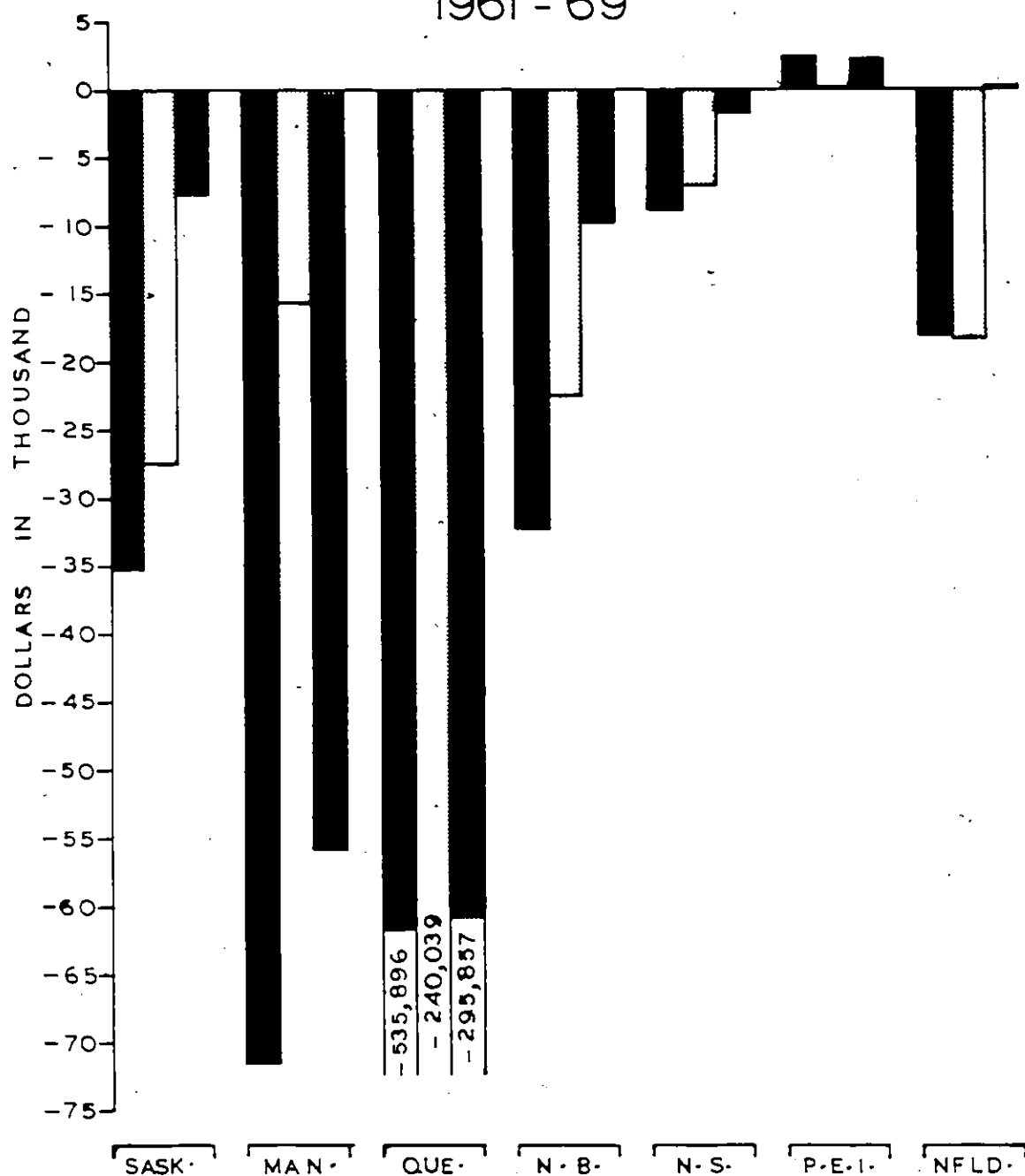
Index:

NG=National Growth.
 IS=Net Total Shift.
 IM=Industrial Mix or Proportionality Shift.
 DG=Differential Growth or Differential shift.
 PM=Proportionality Modification Shift.
 RD=Residual Differential Shift.

in employment, but net inward shifts in value added (see Figures 4-B and 5-B, net total shift). This pattern indicates that these two provinces may have increased their specialization in labour-saving, high productivity industries. Consequently, in spite of their loss in employment, they were able to gain in their share of value added. Except for these two provinces, the patterns of change and growth in value added were very much similar to that of employment growth. And as a result, patterns of change and growth in value added were not dealt with in this study.

FIGURE 5-A: PATTERNS OF VALUE ADDED GROWTH
IN RDIA DESIGNATED AREAS BY PROVINCE:

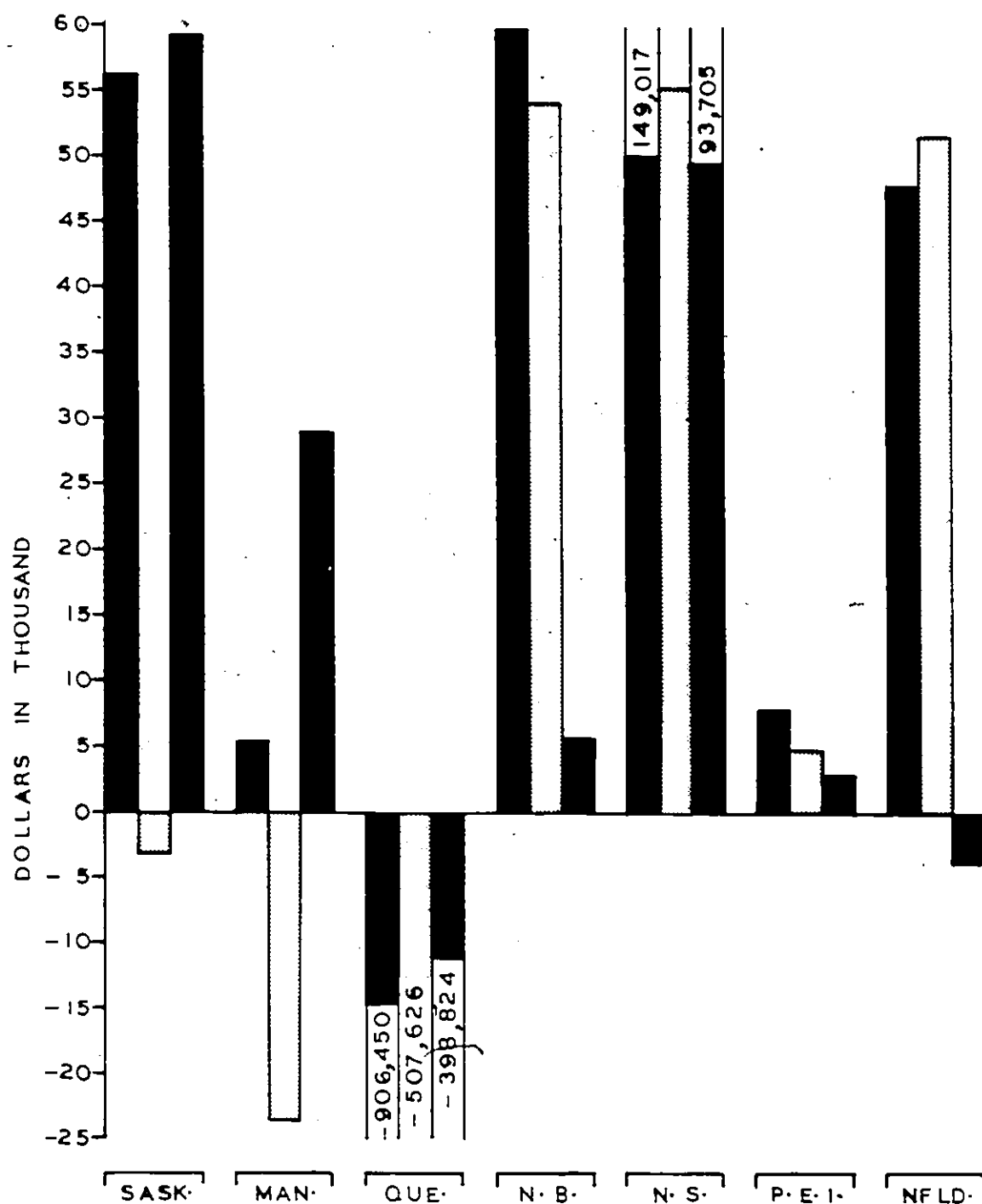
1961 - 69



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FIGURE 5-B: PATTERNS OF VALUE ADDED GROWTH
IN RDIA DESIGNATED AREAS BY PROVINCE:
1970-78



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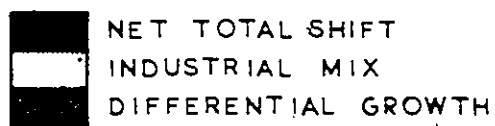


Table 3-A

Patterns of Value Added Growth by Province and Region: 1961-69

I Province/Region	II NG	III IS	IV IM	V DG	VI PM	VII RD
1. Newfoundland	+68015	-18121	-18319	+198	+12924	-12726
2. Prince Edward Is.	+8437	+2525	+43	+2482	-5	+2487
3. Nova Scotia	+159252	-8924	-7148	-1775	-1835	+60
4. New Brunswick	+155108	-32430	-22541	-9889	+11708	-21597
A. Atlantic Region	+390812	-56950	-35906	-21044	+17941	-38985
B. 5. Quebec	+3190279	-535896	-240039	-295857	+110970	-406827
C. 6. Ontario	+5346514	+623561	+669636	-46075	-360115	+314040
7. Manitoba	+283844	-71612	-15743	-55869	+7179	-63048
8. Saskatchewan	+112954	-35318	-27537	-7781	+14814	-22595
9. Alberta	+344045	+30473	-30726	+61199	+17405	+43793
D. Prairie Region	+740843	-76457	-4082	-72376	+2523	-74898
E. 10. British Columbia	+855605	+43932	-36601	+80533	+17093	+63441
territories	+661	+1809	0	+1809	0	+1809
CANADA	+10524714	0	0	0	0	0

Index:

NG=National Growth.
 IS=Net Total Shift.
 IM=Industrial Mix or Proportionality Shift.
 DG=Differential Growth or Differential shift.
 PM=Proportionality Modification Shift.
 RD=Residual Differential Shift.

Table 3-B

Patterns of Value Added Growth by Province and Region: 1970-78

I Province/Region	II NG	III IS	IV IM	V DG	VI PM	VII RD
1. Newfoundland	+211046	+47720	+51638	-3917	-34939	+31022
2. Prince Edward Is.	+33799	+7853	+4900	+2953	-3914	+6867
3. Nova Scotia	+493937	+149017	+55311	+93705	-36886	+130592
4. New Brunswick	+439471	+59766	+54101	+5665	-44549	+50214
A. Atlantic Region	+1178253	+264356	+125500	+138857	-81162	+220018
B. 5. Quebec	+9447824	-906450	-507626	-398824	+311584	-710407
C. 6. Ontario	+17772561	-1444725	-443008	-1001717	+328732	-1330449
7. Manitoba	+810607	+5402	-23637	+29039	+15380	+13660
8. Saskatchewan	+311147	+56213	-3182	+59396	+3085	+56310
9. Alberta	+1111819	+715456	+41031	+674425	-31811	+706235
D. Prairie Region	+2233573	+777072	-51391	+828463	+24126	+804337
E. 10. British Columbia	+2579328	+1310412	+778081	+532331	-434773	+967104
territories	+5324	-664	0	-664	0	-664
CANADA	+33216862	0	0	0	0	0

Index:

NG=National Growth.
 IS=Net Total Shift.
 IM=Industrial Mix or Proportionality Shift.
 DG=Differential Growth or Differential shift.
 PM=Proportionality Modification Shift.
 RD=Residual Differential Shift.

4.1 THE PROVINCE OF QUEBEC

Pre-existing Industrial Structure: Quebec is the second (next to Ontario) most industrialized province of Canada. Its industrial structure is also fairly diversified. However, according to a DREE report (1979g), it consists of a very high proportion of traditional, labour-intensive, and low productivity industries. It is under-represented in the rapid growth industries. In addition, Quebec's industries are highly fragmented, and suffer from outdated machinery and equipment as well as shortage of qualified and skilled workers. These structural deficiencies appear to be one of the reasons why Quebec experienced large employment losses during the first period as well as the second period, which were clearly reflected in the shift and share results (discussed below).

4.1.1 Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78

The shift and share results for Quebec are presented in Tables 4-A and 4-B. Column II of these tables indicates that Quebec experienced a net total loss in manufacturing employment during the 1961-69 period as well as the 1970-78 period. In the first period the province lost 31,491 manufacturing jobs, of which 17,614 (55.9 per cent) jobs were lost due to its weak industrial composition (negative indus-

trial mix effect, Table 4-A, Column III), and 13,877 (44.1 per cent) jobs were lost as the result of its comparative disadvantages (negative differential growth, Table 4-A, Column IV). In the second period Quebec's manufacturing employment loss increased to 38,942, of which 17,587 (45.2 per cent) jobs were accounted for by its weak industrial composition (Table 4-B, Column III) and 21,355 (54.8 per cent) jobs were accounted for by its comparative disadvantages (Table 4-B, Column IV). When the results of the second period were compared with those of the first period, the following growth patterns were identified. During the second period (i) although there was a slight drop in employment loss resulting from industrial mix effect, it was still very high, and (ii) there was a considerable increase in employment loss (about 54.0 per cent higher) that resulted from differential growth disadvantages. Although these patterns of growth may have resulted from Quebec's pre-existing industrial structure, a change in demand and supply conditions, and provincial government policies, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

Table 4-A

Industrial Patterns of Employment Growth in Quebec: 1961-69

I Manufacturing Industries Names	SIC Codes	II Total Shift		III Industrial Mix		IV Differential Growth	
		Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Communications Equip.	(3350)	+6126	+19.4	+8219	+25.7	-2093	-6.2
Plastic Fabricators	(3850)	+2326	+7.4	+3432	+10.7	-1106	-3.3
Knitting Mills	(2390)	+2000	+6.3	-166	-0.3	+2166	+11.0
Misc. Machinery & Equip.	(3150)	+1912	+6.0	+3954	+12.4	-2042	-6.1
Machine Shops	(3080)	+1776	+5.6	+1338	+4.2	+438	+2.2
Iron & Steel Mills	(2910)	+1630	+5.2	-6	-0.0	+1637	+8.3
Boiler & Plate Works	(3010)	+1552	+4.9	+438	+1.4	+1115	+5.7
Misc. Electrical Prod.	(3390)	+1524	+4.8	+786	+2.5	+738	+3.8
Electrical Ind. Equip.	(3360)	+1442	+4.6	+483	+1.5	+959	+4.9
Truck Body & Trailer	(3240)	+1146	+3.6	+540	+1.7	+606	+3.1
Paper Converters	(2740)	+1109	+3.5	+734	+2.3	+375	+1.9
Metal Stamping & Coating	(3040)	+1015	+3.2	+1085	+3.4	-70	-0.2
Women's Clothing Contr.	(2442)	+922	+2.9	+726	+2.3	+196	+1.0
Other Furniture	(2660)	+540	+1.7	+649	+2.0	-109	-0.3
Sawmills	(2513)	+131	+0.4	-1359	-2.7	+1489	+7.6
Publishing Only	(2880)	+127	+0.4	+107	+0.3	+20	+0.1
Smelting & Refining	(2950)	+63	+0.2	-1426	-2.9	+1489	+7.6
Commercial Printing	(2860)	+33	+0.1	-564	-1.1	+597	+3.0
Cotton Yarn & Cloth Mills	(1830)	-6369	-10.1	-5499	-11.1	-869	-2.6
The Grouped Industries	(9998)	-5904	-9.4	-2598	-5.2	-3306	-9.9
Shoe Factories	(1740)	-4712	-7.5	-4101	-8.3	-611	-1.8
Women's Clothing	(2441)	-3823	-6.1	-2735	-5.5	-1088	-3.2
Aircraft & Parts	(3210)	-3081	-4.9	-735	-1.5	-2347	-7.0
Pulp & Paper Mills	(2710)	-2845	-4.5	-1451	-2.9	-1394	-4.2
Men's Clothing	(2431)	-2765	-4.4	-2277	-4.6	-489	-1.5
Printing & Publishing	(2890)	-2436	-3.9	-1412	-2.8	-1024	-3.1
Tobacco Products	(1530)	-2234	-3.5	-1866	-3.8	-368	-1.1
Children's Clothing	(2450)	-2088	-3.3	-2372	-4.8	+284	+1.4
Hat & Cap	(2470)	-1664	-2.6	-1593	-3.2	-71	-0.2
Shipbuilding & Repair	(3270)	-1479	-2.3	-1454	-2.9	-25	-0.1
Bakeries	(1290)	-1471	-2.3	-2546	-5.1	+1075	+5.5
Hosiery Mills	(2310)	-1318	-2.1	-1721	-3.5	+403	+2.1
Fabricated Struct. Metal	(3020)	-1201	-1.9	+183	+0.6	-1384	-4.1
Biscuits Manufacturers	(1280)	-1141	-1.8	-669	-1.4	-472	-1.4
Paint & Varnish	(3750)	-1020	-1.6	-462	-0.9	-557	-1.7
Misc. Metal Fabricating	(3090)	-849	-1.3	+393	+1.2	-1242	-3.7
Fur Goods	(2460)	-825	-1.3	-1035	-2.1	+210	+1.1
Confectionery	(1310)	-672	-1.1	-553	-1.1	-119	-0.4
Sash & Door	(2541)	-619	-1.0	-41	-0.1	-578	-1.7
Breweries	(1450)	-596	-0.9	-854	-1.7	+258	+1.3
Synthetic Textile	(2010)	-463	-0.7	+1489	+4.7	-1952	-5.8
Soft Drink	(1410)	-292	-0.5	-467	-0.9	+175	+0.9
Foundation Garment	(2480)	-137	-0.2	-146	-0.3	+9	+0.1
Household Furniture	(2610)	-36	-0.1	+112	+0.4	-149	-0.4
Wool Yarn Mills	(1930)	-19	-0.0	-87	-0.2	+69	+0.4
Total Gains*		+31654	+80.2	+32026	+77.3	+19667	+73.0
Total Losses*		-63145	-79.3	-49640	-80.9	-33544	-70.0
Net		-31491		-17614		-13877	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 4-B

Industrial Patterns of Employment Growth in Quebec: 1970-78

I		II		III		IV	
Manufacturing Industries		Total Shift		Industrial Mix		Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Sawmills	(2513)	+5945	+17.0	+2427	+8.1	+3517	+18.1
Sash & Door	(2540)	+2677	+7.6	+2598	+8.7	+80	+0.4
Women's Clothing Contr.	(2442)	+2489	+7.1	+2269	+7.6	+220	+1.1
Iron & Steel Mills	(2910)	+2182	+6.2	+317	+1.1	+1865	+9.6
Plastics Fabricating	(1650)	+2030	+5.8	+2665	+8.9	-634	-1.6
Commercial Printing	(2860)	+1962	+5.6	+879	+2.9	+1083	+5.6
Misc. Machinery & Equip.	(3150)	+1401	+4.0	+1541	+5.2	-139	-0.3
Household Furniture	(2619)	+1150	+3.3	+975	+3.3	+175	+0.9
Publishing Only	(2880)	+1139	+3.3	+2073	+6.9	-934	-2.3
Inorganic Chemicals	(3782)	+1089	+3.1	+278	+0.9	+811	+4.2
Breweries	(1093)	+1042	+3.0	+596	+2.0	+446	+2.3
Misc. Metal Fabricating	(3090)	+890	+2.5	+409	+1.4	+480	+2.5
Carpet & Rugs	(1860)	+839	+2.4	+761	+2.5	+79	+0.4
Truck Body & Trailer	(3240)	+828	+2.4	+541	+1.8	+287	+1.5
Misc. Electrical Prod.	(3399)	+814	+2.3	+725	+2.4	+89	+0.5
Aluminum Rolling	(2960)	+691	+2.0	+38	+0.1	+653	+3.4
Misc. Textile	(1899)	+668	+1.9	+1424	+4.8	-755	-1.9
Electrical Ind. Equip.	(3360)	+503	+1.4	-313	-0.7	+816	+4.2
Fabricated Struct. Metal	(3020)	+49	+0.1	-963	-2.0	+1012	+5.2
The Grouped Industries	(9998)	-14131	-19.1	-4742	-10.0	-9390	-23.0
Communications Equip.	(3350)	-8612	-11.6	-4394	-9.2	-4218	-10.3
Shoe Factories	(1740)	-3756	-5.1	-2291	-4.8	-1465	-3.6
Aircraft & Parts	(3210)	-3346	-4.5	-2968	-6.2	-378	-0.9
Hosiery Mills	(2310)	-3019	-4.1	-2728	-5.7	-291	-0.7
Misc. Chemical Ind.	(3799)	-2584	-3.5	-1163	-2.5	-1421	-3.5
Pulp & Paper Mills	(2710)	-2574	-3.5	-909	-1.9	-1665	-4.1
Bakeries	(1072)	-2465	-3.3	-2242	-4.7	-223	-0.6
Women's Clothing	(2441)	-2207	-3.0	-2320	-4.9	+113	+0.6
Misc. Furniture	(2660)	-2090	-2.8	-1145	-2.4	-945	-2.3
Men's Clothing	(2431)	-2052	-2.8	-976	-2.1	-1076	-2.6
Foundation Garment	(2480)	-1723	-2.3	-1290	-2.7	-433	-1.1
Other Knitting Mills	(2392)	-1652	-2.2	-1331	-2.8	-320	-0.8
Publishing & Printing	(2890)	-1605	-2.2	-317	-0.7	-1288	-3.2
Machine Shops	(3080)	-1599	-2.2	-1034	-2.2	-565	-1.4
Children's Clothing	(2450)	-1589	-2.1	-1594	-3.4	+5	+0.0
Soft Drink	(1091)	-1587	-2.1	-511	-1.1	-1076	-2.6
Rubber Products	(1620)	-1355	-1.8	+727	+2.4	-2082	-5.1
Confectionery	(1081)	-1286	-1.7	-696	-1.5	-590	-1.5
Metal Stamping & Coating	(3040)	-1106	-1.5	+434	+1.5	-1540	-3.8
Shipbuilding & Repair	(3270)	-970	-1.3	-664	-1.4	-306	-0.8
Wool Yarn Mills	(1820)	-922	-1.3	-1534	-3.2	+612	+3.2
Smelting & Refining	(2950)	-727	-1.0	-3404	-7.2	+2677	+13.8
Paint & Varnish	(3750)	-558	-0.8	-550	-1.2	-8	-0.0
Dairy Products	(1040)	-537	-0.7	-1824	-3.8	+1287	+6.6
Misc. Paper Converters	(2740)	-537	-0.7	-520	-1.1	-17	-0.0
Boiler & Plate Works	(3010)	-486	-0.7	+271	+0.9	-757	-1.9
Hat & Cap	(2492)	-469	-0.6	-323	-0.7	-146	-0.4
Fur Goods	(2460)	-156	-0.2	-265	-0.6	+108	+0.6
Biscuits Manufacturers	(1071)	-135	-0.2	-192	-0.4	+56	+0.3
Total Gains*		+35022	+81.0	+29948	+73.4	+19461	+85.0
Total Losses*		-73964	-88.9	-47535	-91.1	-40816	-80.4
Net		-38942		-17587		-21355	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

4.1.2 Patterns of Structural Changes and the RDIA Grants

Figure 6 shows the spatial distribution of RDIA grants. It is evident from this figure that among the slow growing provinces, Quebec was the largest recipient. The province accounted for 54.1 per cent of net accepted offers, 49.6 per cent of estimated capital cost, 45.4 per cent of incentive grants, and 57.6 per cent of expected new jobs. In terms of absolute number of grants and new jobs, it certainly was the largest recipient, but in comparison to its broad industrial base and population, it was not the largest recipient. For example, the new jobs created by the RDIA grants formed only 17.4 per cent of total manufacturing employment in the province, which is the lowest percentage among the slow growing provinces (see Appendix A). Furthermore, Quebec received 46 grants per 100,000 population, which is again lower than the Atlantic region (53 grants per 100,000 population).²⁴ Thus the RDIA grants, which were given to Quebec, were not sufficient to bring about changes in the industrial structure and to stimulate the differential employment growth of the province. In order to determine the impact of RDIA assisted establishments on the structural change and the differential employment growth of the province, the distribution of these establishments by various

²⁴ For calculating the number of grants per 100,000 population, the 1971 population figures were used.

types were examined.

Sector Level Analysis: It is argued that "The formation of entirely new firms is one channel through which a region can adapt its industrial structure to the changing pattern of demand" (Johnson and Cathcart, 1979: 278). Although there was a need to attract mostly new establishments to the province, an examination of Figure 7-A (i and ii) indicates that this was not the case in Quebec. The province received a very high proportion (46.0 per cent) of RDIA grants for expansion and modernization, a considerable proportion (37.0 per cent) of which were in the national declining sectors (see Appendix D). The expansion and modernization cases were noted to be fewer job creators. They also tend to maintain existing industrial structure. This may be another reason why Quebec could not improve its industrial structure and was performing poorly during the second period.

Another way to change favourably the industrial structure of a province and to improve its growth performance, is to attract national growth industries. This was again not the case in Quebec which is under-represented in national growth industries. Figure 7-B (i and ii) shows that instead of an adaptive policy; that is, to allocate resources away from economically declining activities (Davenport et al., 1982), the RDIA programme appears to have supported a trend toward national declining industries. In

FIGURE 6: DISTRIBUTION OF RDIA GRANTS BY PROVINCE:
1970-78

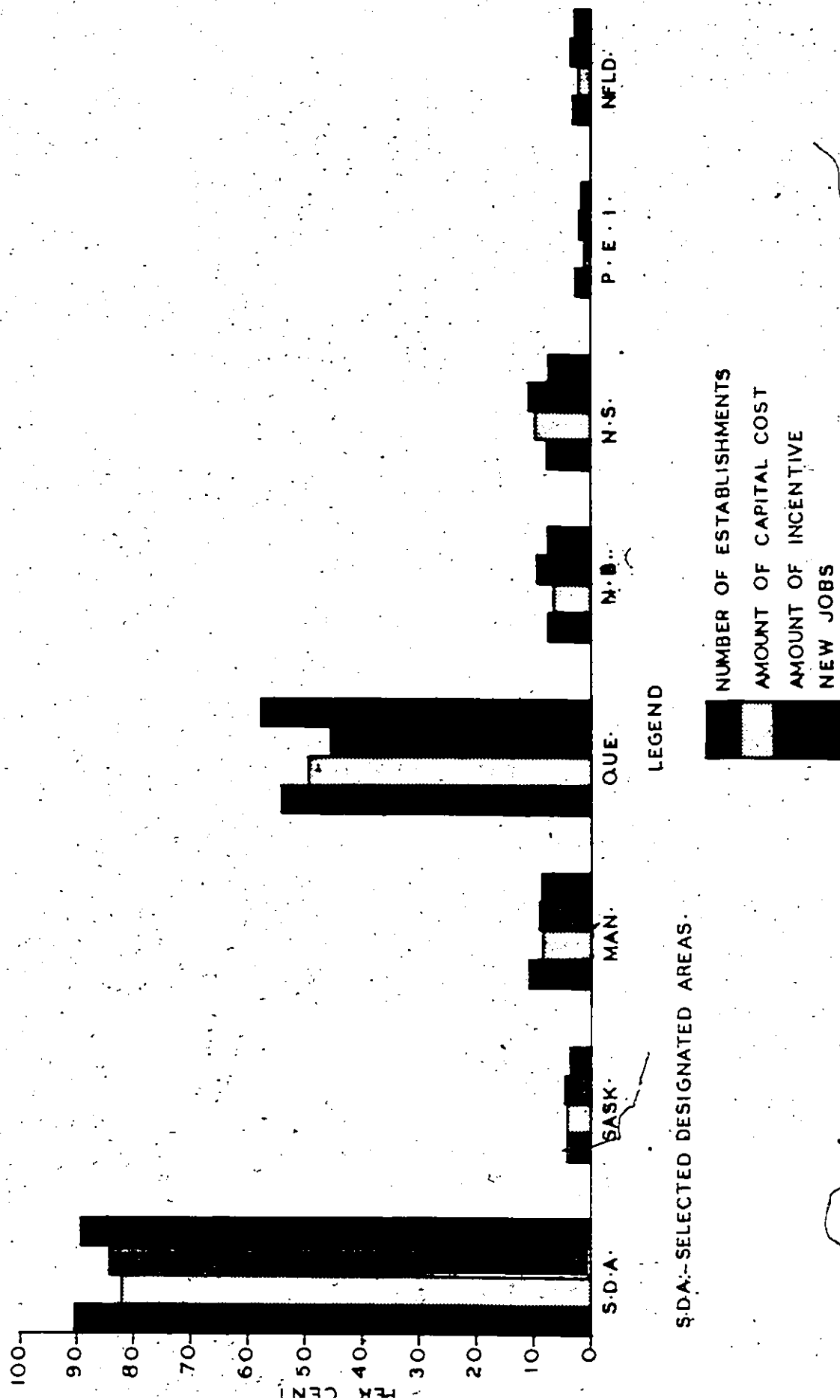
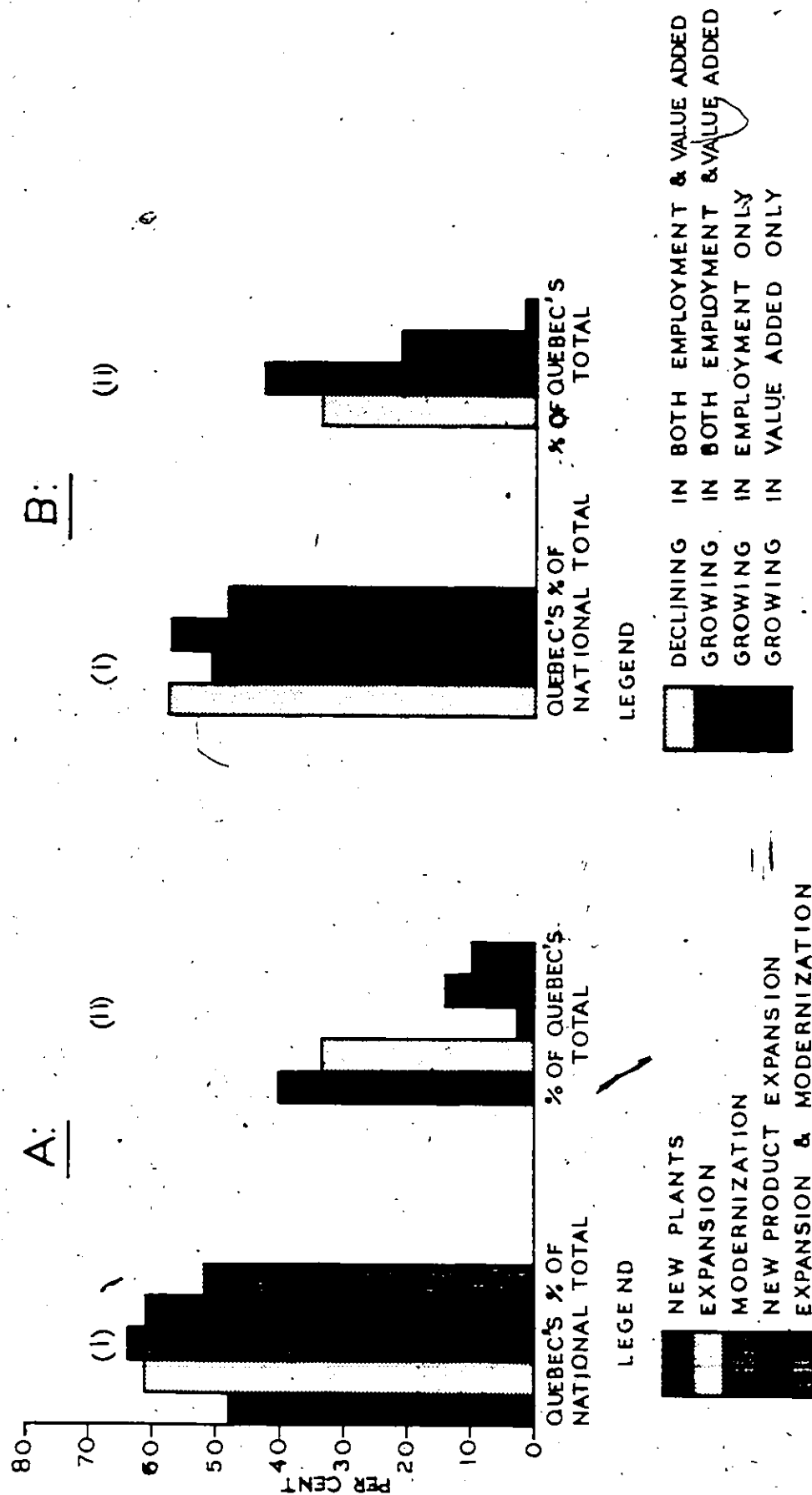


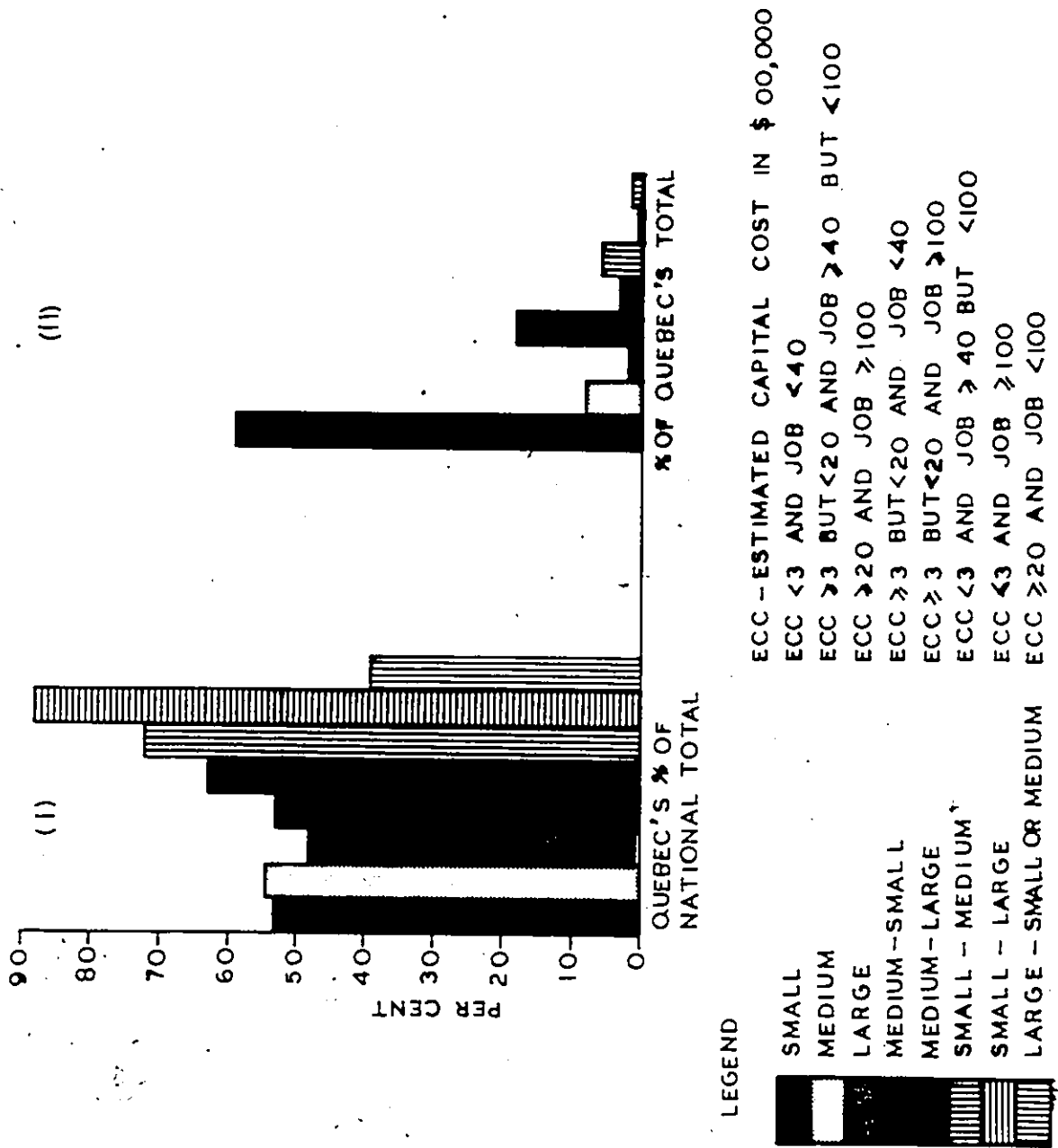
FIGURE 7-A, B: DISTRIBUTION OF RDIA GRANTS IN QUEBEC
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78



Quebec about 34.0 per cent of grants were given to national declining industries both in employment and value added, which was the highest percentage among the slow growing provinces, Prince Edward Island being the exception (see Appendix F). This may also be one of the reasons why Quebec could not improve its industrial structure and was losing its share of manufacturing employment.

It is reported by DREE (1979g) that Quebec's industrial structure is made up of small, medium sized, and labour-intensive industries, which have low propensity to invest in research and development. An examination of Figure 7-C (i and ii) indicates that Quebec received a very high proportion (91.9 per cent) of grants which were small and medium sized. About 36.0 per cent of small and medium sized establishments were in the category of national declining industries (see Appendix E). In addition to this, the province received an extremely high percentage (88.0) of "small-large" sized establishments which were labour-intensive (see Figure 7-C (i)). About 77.0 per cent of these labour-intensive establishments were in the declining sectors. It appears from this pattern of distribution that the RDIA programme has added to Quebec's existing industrial structure some declining small and medium sized establishments as well as some labour-intensive, low technology industries. This may be another reason why Quebec was unable to improve its industrial structure and was performing poorly during the second period.

FIGURE 7-C: DISTRIBUTION OF RDIA GRANTS IN QUEBEC
BY SIZE OF ESTABLISHMENT : 1970 - 78



There were two exceptional examples in which Quebec appears to have improved its industrial structure during the second period. First, it was noted above that Quebec experienced a slight drop in employment loss resulting from its industrial mix effect. Second, it is evident from Table 2-A and 2-B (Column VI) that Quebec experienced positive proportionality modification shift (PM) which was even higher during the second period. This indicates that the province was able to gain some employment by modifying its industrial structure. This gain in employment and a slight drop in employment loss appear to be partly the result of the RDIA programme which attracted some manufacturing establishments which were in the national growth sectors (see Figure 7-B-(ii)), and were new plants (see Figure 7-A-(ii)). However, this employment gain (Tables 2-A, 2-B, Column VI, $3569-2379 = +1190$ jobs) accruing from proportionality modification shift (PM) effect was associated with a higher employment loss (Tables 2-A, 2-B, Column V, $(-21355) - (-13877) = -7478$ jobs) resulting from differential growth. Such a pattern of growth indicates that: (i) Quebec did not benefit from increasing its specialization in national growth industries for which the province had no differential growth advantages, and (ii) these employment gains were not large enough to offset employment losses. Consequently, the province experienced a net total loss in manufacturing employment.

Disaggregated Level Analysis: The shift and share results at a disaggregated level of manufacturing industry are presented in Tables 4-A and 4-B. It is to be noted that these tables do not provide a complete list of all industries in the province, but list only those industries which experienced large employment gains or losses and had significant influence on the provincial growth performance. These tables (Column I) clearly show the important manufacturing industries which constitute the industrial structure of Quebec. They (Column II) also indicate that in both periods Quebec did have some industries which were experiencing net employment gains. However, the employment gains in these industries were not large enough to offset the employment losses in other industries. Consequently, the province experienced a net employment loss in both periods.

Tables 4-A and 4-B provide a list of around twenty-five industries which were experiencing net employment losses in either the first period or the second period, and accounted for about 80.0 per cent of total employment losses in the province (Column II). An examination of these industries reveals that Quebec's industrial structure was made up of industries which were traditional, resource based, and labour-intensive. A majority of these industries were declining nationally (Table 4-C, Column VI) and losing employment not only during the first period, but also during the second period (Table 4-C, Columns II and III). In spite of belonging to national declining sectors, these industries

received (572 grants) about 21.0 per cent of RDIA grants (Table 4-C, Columns IV and V). It appears from these results that in the case of Quebec, the RDIA programme has supported a trend toward national declining industries. This may be one of the reasons why Quebec could not improve its industrial mix and was experiencing employment losses.

Table 4-D (Group III, Columns II and III) shows that in the case of communications equipment, miscellaneous furniture, knitting mills, machine shops, metal stamping and coating, smelting and refining, miscellaneous paper converters, and boiler and plate works industries, the pattern of net employment growth reversed from positive in the first period to negative in the second period. Although this could be the result of change in their demand and supply conditions, to some extent, it may also have resulted from the effects of the RDIA programme. For example, a look at Column VI of Table 4-D (Group III) reveals that, except for metal stamping and coating, and boiler and plate works, all these industries were declining nationally. Furthermore, none of these industries had a comparative advantage (positive differential growth) in the province, smelting and refining being an exception (Table 4-B, Column IV). Thus by giving an additional 305 (about 11.0 per cent) grants to national declining industries and to industries having comparative disadvantages in the province, the RDIA programme appears to have created competition among these industries for limited markets and thereby causing employment losses.

Table 4-C
Distribution of RDIA Grants among Loser Industries of Quebec

I Manufacturing Industries	SIC Codes	II 1961-69		III 1970-78		IV No. of RDIA Grants	V No. of RDIA New Jobs	VI Types of Indus- tries
		Total Absolute Values	% of Total	Total Absolute Values	% of Total			
Names								
Group: I								
Shoe Factories	(1740)	-4712	-7.5	-3756	-5.1	26	1430	D
Pulp & Paper Mills	(2710)	-2845	-4.5	-2574	-3.5	10	990	GV
Women's Clothing	(2441)	-3823	-6.1	-2207	-3.0	25	1275	D
Men's Clothing	(2431)	-2765	-4.4	-2052	-2.8	88	5368	D
Publishing & Printing	(2890)	-2436	-3.9	-1605	-2.2	0	0	D
Children's Clothing	(2450)	-2088	-3.3	-1589	-2.1	11	660	D
Shipbuilding & Repair	(3270)	-1479	-2.3	-970	-1.3	5	830	D
Paint & Varnish	(3750)	-1020	-1.6	-558	-0.8	2	16	D
Hat & Cap	(2492)	-1664	-2.6	-469	-0.6	0	0	D
Fur Goods	(2460)	-825	-1.3	-156	-0.2	4	68	GV
Biscuits Manufacturers	(1071)	-1141	-1.8	-135	-0.2	3	45	D
Group: II								
The Grouped Industries	(9998)	-5904	-9.4	-14131	-19.1	283	10576	RD
Aircraft & Parts	(3210)	-3081	-4.9	-3346	-4.5	4	104	GV
Hosiery Mills	(2310)	-1318	-2.1	-3019	-4.1	5	400	D
Bakeries	(1072)	-1471	-2.3	-2465	-3.3	37	370	D
Foundation Garment	(2480)	-137	-0.2	-1723	-2.3	3	156	D
Soft Drink	(1091)	-292	-0.5	-1587	-2.1	14	98	D
Confectionery	(1081)	-672	-1.1	-1286	-1.7	36	1332	D
Wool Yarn Mills	(1820)	-19	-0.0	-922	-1.3	16	464	D

Index:

D = Nationally Declining in both Employment and Value Added.

GV = Nationally Growing in both Employment and Value Added.

RD = Nationally Growing in Value Added only.

RD = Regionally Declining in Employment.

Except for these industries, there were approximately eighteen industries which experienced large employment gains in either the first period or the second period, and accounted for about 80.0 per cent of total employment gains in the province (see Table 4-A and 4-B, Columns I and II). Among these industries, sawmills, women's clothing contractor, iron and steel mills, plastics fabricating, commercial printing, miscellaneous machinery and equipment, publishing only, truck body and trailer, miscellaneous electrical products, and electrical equipment were doing well in the province and gaining employment in both periods (see Table 4-D, Group I, Columns II and III). Sawmills, and commercial printing performed extremely well during the second period. For example, in sawmills the employment gains increased from 131 during the first period to 5,945 during the second period. Similarly, in commercial printing the employment gains increased from 33 during the first period to 1,962 during the second period. These two industries as well as other industries of this group were growing nationally and received (593 grants) about 21.0 per cent of RDIA grants, electrical equipment being an exception (see Table 4-D, Group I, Columns IV, V and VI). This pattern of distribution indicates that the RDIA programme did provide some grants to industries which were doing well in the province. It may be for this reason that Quebec showed some improvement in its proportionality modification shift (Tables 2-A, 2-B, Column VI)

and a slight drop in employment losses resulting from industrial mix effect (Tables 2-A, 2-B, Column IV). However, these employment gains were not sufficient to compensate employment losses.

Table 4-D (Group II, Columns II and III) shows that in the case of sash, door and other millworks, household furniture, breweries, miscellaneous metal fabricating, and fabricated structural metal, the pattern of net employment growth reversed from negative during the first period to positive during the second period. It is to be noted that all these industries had differential growth advantages in the province (see Table 4-B, Column IV). In addition to this, these industries were growing nationally, fabricated structural metal being the exception. Thus by giving 371 (about 13.0 per cent) grants to nationally growing industries which had differential growth advantages in the province, the RDIA programme appears to have improved their growth performance. It may be also due to this reason that Quebec experienced some improvement in its proportionality modification shift as well as a slight drop in employment losses resulting from industrial mix effect. Again, these grants were not sufficient to generate enough employment for compensating the losses, and thus to reverse the pattern of growth in the province.

4.1.3 Patterns of Differential Employment Growth and the RDIA Grants

It is evident from Figures 4-A and 4-B that during both periods, Quebec was the largest net employment loser among the provinces, the major part of this loss resulted from concentration of industries which had comparative disadvantages (negative differential growth). Furthermore, the employment loss that resulted from comparative disadvantages was not only large but also higher during the the second period (see Table 4-A and 4-B, Column IV). This pattern of growth clearly indicates that Quebec's differential growth performance became even worse during the second period. It may have resulted from the RDIA programme. In order to describe the association between the RDIA programme and the performance of Quebec's differential employment growth, the distribution patterns of RDIA assisted establishments are examined below.

There were 151 industrial categories in Quebec, which received RDIA grants. Of the 151 industries, 106 (about 70.0 per cent) were declining regionally or had a comparative disadvantage in the province. Table 4-E illustrates this point. It provides a list of those industries which accounted for 68.9 per cent of RDIA grants and were expected to create 66.0 per cent of new jobs. Columns II and V of this table indicate that, except for a few industries, the majority of grants were given to industries which were de-

clining regionally or had comparative disadvantages in the province (see Groups III and IV). In addition to this, some of these industries were even declining nationally. It appears from this pattern of distribution that the RDIA programme, instead of investing in industries which had the possibility of providing a more secure future for the province, gave grants to industries which were declining. In addition, the grants given to Quebec were not sufficient in absolute terms. The expected new jobs to be created by these grants accounted for only 17.4 per cent of total manufacturing employment in the province, a percentage which was the lowest among the slow growing provinces and even lower than the average of selected slow growing provinces (see Appendix A, Column V, the Last Column).

For further confirmation of the above association, the differential growth in employment of the recipient industries was regressed against the new jobs. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = -0.43$) and regression coefficient ($B = -0.35$) were negative and statistically significant at more than .001 and .01 levels of confidence respectively. The new jobs explained about 18.0 per cent of variations in the differential growth. These results indicate that some deterioration in the differential growth of Quebec may have resulted from the RDIA programme. However, this was not the only factor, because a very high percentage of variation in the differential growth remains unexplained.

Table 4-E

Distribution of RDIA Grants among Various Industries of Quebec: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%	1970	
Group: I							
Sawmills	(2513)	203	7.3	6496	7.1	1.8	GRG
Sash & Door	(2540)	173	6.3	4132	4.5	0.9	GRG
Household Furniture	(2619)	132	4.7	3169	3.5	1.7	GRG
Commercial Printing	(2860)	92	3.3	1288	1.4	2.1	GRG
Sporting Goods	(3931)	45	1.6	2115	2.3	0.4	GRG
Truck Body & Trailer	(3240)	44	1.6	3449	3.8	0.3	GRG
Plastics & Synth. Resins	(3730)	41	1.5	1025	1.1	0.3	GRG
Architectural Metal	(3039)	33	1.2	561	0.6	0.4	GRG
Group: II							
Dairy Products	(1040)	47	1.7	705	0.8	1.7	DRG
Fabricated Struct. Metal	(3020)	44	1.6	1100	1.2	0.9	DRG
Women's Clothing	(2441)	25	0.9	1275	1.4	3.8	DRG
Group: III							
Misc. Machinery & Equip.	(3150)	131	4.7	4585	5.0	2.2	GRD
Metal Stamping & Coating	(3040)	102	3.6	2025	2.2	1.5	GRD
Plastics Fabricating	(1650)	82	3.0	2296	2.5	1.1	GRD
Meat Processors	(1011)	59	2.1	767	0.8	1.5	GRD
Misc. Food Processors	(1089)	38	1.4	912	1.0	*	GRD
Fish Products	(1020)	31	1.1	620	0.7	0.3	GRD
Wire & Wire Products	(3050)	29	1.0	551	0.6	1.0	GRD
Hardware, Tool & Cutlery	(3060)	27	1.0	621	0.7	0.7	GRD
Misc. Chemical Ind.	(3799)	23	0.8	759	0.8	1.5	GRD
Pulp & Paper Mills	(2710)	10	0.4	990	1.1	6.1	GRD
Group: IV							
Men's Clothing	(2431)	88	3.2	5368	5.9	3.3	DRD
Knitting Mills	(2390)	68	2.4	3808	4.2	1.8	DRD
Misc. Wood Industries	(2599)	41	1.5	820	0.9	0.2	DRD
Machine Shops	(3080)	41	1.5	574	0.6	0.8	DRD
Bakeries	(1072)	37	1.3	370	0.4	2.0	DRD
Misc. Furniture	(2660)	37	1.3	888	1.0	1.0	DRD
Confectionery	(1081)	36	1.3	1332	1.5	0.6	DRD
Filament Yarn Mills	(1830)	31	1.1	1240	1.4	*	DRD
Shoe Factories	(1740)	26	0.9	1430	1.6	1.8	DRD
Cotton Yarn & Cloth Mills	(1810)	26	0.9	962	1.1	*	DRD
Iron Foundries	(2940)	25	0.9	1100	1.2	0.3	DRD
Communications Equip.	(3350)	25	0.9	1825	2.0	3.3	DRD
Textile Dyeing	(1894)	24	0.9	840	0.9	0.5	DRD
Sub Total		1916	68.9	59998	66.0		
The Grouped Ind. & Rest	(9998)	863	31.1	30898	34.0	54.2*	RD
Provincial Total		2779	100.0	90896	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

DRG = Declining Nationally but Growing Regionally.

RD = Declining Regionally.

In order to investigate other possible factors affecting the differential growth of Quebec, the standardized residuals were examined. Table 4-F (Group I) shows the industries in which the standardized residuals were greater than +1. It is in these industries that employment gains were either more than expected or the employment losses were less than expected. This result may be due to an improvement of the comparative advantage and/or access to inputs or markets. For example, the rapid growth of employment in the dairy products sector appears to have resulted from increased access to the European Economic Community markets, especially for cheddar cheese (DREE, 1979g). In the case of iron and steel industry, it may be due to comparative advantage, such as abundant hydro-electric power supply at low cost and the availability of iron ore in the province. In the miscellaneous machinery and equipment, the improvement may have resulted from the discovery of new markets. For instance, a DREE report notes that "Quebec has discovered profitable areas of specialization in machinery for...sawmill equipment, woodworking machines, forest equipment, excavation and drilling machines, and compressors and pumps for extracting and processing ore" (DREE, 1979g: 59).

On the other side of the ledger, there were industries in which the standardized residuals were even greater than -1 (Table 4-F, Group II). These industries were the industries where the employment loss was even greater than expected or the employment gain was less than expected.

Table 4-F

Distribution of Standardized Residuals among
Various Industries of Quebec

I		II
Manufacturing Industries		Standardized
Names	SIC Codes	Residuals

Group: I		

Sawmills	(2513)	+5.1
Smelting and Refining	(2950)	+2.4
Iron and Steel Mills	(2910)	+2.1
Dairy Products	(1040)	+1.3
Sash and Door	(2540)	+1.3
Commercial Printing	(2860)	+1.3
Fabricated Struct. Metal	(3020)	+1.2
Misc. Machinery & Equip.	(3150)	+1.2
Household Furniture	(2619)	+1.1
Group: II		

The Grouped Industries	(9998)	-5.2
Communications Equipment	(3350)	-3.4
Rubber Products	(1620)	-1.8
Pulp and Paper Mills	(2710)	-1.3
Misc. Chemical Industries	(3799)	-1.2
Soft Drink	(1091)	-1.1
=====		

This situation may have resulted from loss in comparative advantages and/or further deterioration in their access either to inputs or markets. The DREE report notes that in the case of pulp and paper mills "Quebec's share of the American market decreased from 40 to 30 per cent between 1950 and 1976" (DREE, 1979g: 54). The coming into existence of low cost producers in the Third World may also have affected Quebec's comparative advantage. The increasing cost of raw materials and delivery cost of finished products appear to have put this industry at a competitive disadvantage and thus is responsible for the loss of markets and employment.

It appears from the above results that the effects of RDIA programme in Quebec were limited at best. This conclusion is based on the following facts: (i) the RDIA grants given to Quebec were not sufficient in absolute terms, (ii) about one-thirds of the industrial grants went to national declining industries, most of which were, the traditional, resource-based, labour-intensive, and low-technology industries, (iii) about one-fifths of RDIA assisted establishments, which were in the national growth sectors, had a differential growth disadvantage (see Table 4-E, Group III, Column II), (iv) more than two-fifths of grants were for expansion and modernization cases; modernization especially suspected since it can be interpreted as maintaining jobs rather than creating new ones, and (v) finally in granting

assistance to declining industries, and for expansion and modernization, it tended to adopt in practice a defensive policy. This approach may be acceptable from a social point of view, but appears to be inconsistent with the RDIA objective - a change in the industrial structure favourable to the national trend.

4.2 PRINCE EDWARD ISLAND

Pre-existing Industrial Structure: Prince Edward Island is the least industrialized province of Canada. In addition to this, the province is highly specialized in processing of primary products. For instance, more than 75.0 per cent of its manufacturing employment is concentrated in food and fish processing industries. The remaining employment is accounted for by forestry and other industries. It is noted by DREE (1979c) that because of the small domestic market, the prices of Prince Edward Island's manufactured goods are set externally. Some of its primary products are subject to great price fluctuations and are of a cyclical nature. Furthermore, the province suffers from lack of capital, an increasing wage rate, a very high cost of electrical energy, and the depletion of natural resources. To some extent, these factors appear to have deteriorated the differential growth performance of Prince Edward Island and reversed the pattern of employment growth from a net total gain during the first period to a net total loss during the

second period. These patterns of growth were reflected in the shift and share results (discussed below).

It was noted above that in manufacturing employment, Prince Edward Island experienced a net total loss (Figure 4-B), whereas in value added by manufacture, it experienced a net total gain (Figure 5-B). Since the province is heavily concentrated in resource-based industries which tend to be capital-intensive, the application of modern technology may have increased productivity at the cost of employment.

Table 5-A
Industrial Patterns of Employment Growth in Prince Edward Island: 1961-69

I		II		III		IV	
Manufacturing Industries		SIC	total Shift	Industrial Mix	Differential Growth		
Names	Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
The Grouped Industries	(9998)	+362	+69.1	-1	-100.0	+363	+71.9
Fish Products	(1110)	+162	+30.9	+20	+100.0	+142	+28.1
Total Gains*		+524	+100.0	+20	+100.0	+505	+100.0
Total Losses*		-0	-0.0	-1	-100.0	-0	-0.0
Net		+524		+19		+505	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 5-B
Industrial Patterns of Employment Growth in Prince Edward Island: 1970-78

I		II		III		IV	
Manufacturing Industries		Total Shift		Industrial Mix		Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Dairy Products	(1040)	+74	+74.7	-54	-98.2	+128	+84.8
Commercial Printing	(2860)	+25	+25.3	+2	+1.2	+23	+15.2
Fish Products	(1020)	-179	-66.3	+169	+98.8	-348	-79.5
The Grouped Industries	(9998)	-91	-33.7	-1	-1.8	-90	-20.5
Total Gains*		+99	+100.0	+171	+100.0	+151	+100.0
Total Losses*		-270	-100.0	-55	-100.0	-438	-100.0
Net		-171		+116		-287	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

4.2.1 Regional Patterns of Manufacturing Employment
Growth: 1961-69 and 1970-78

The shift and share results for Prince Edward Island are presented in Tables 5-A and 5-B. Column II of Table 5-A shows that Prince Edward Island experienced a net total gain of 524 manufacturing jobs during the 1961-69 period. Of the 524 jobs, 19 (3.6 per cent) jobs were accounted for by Prince Edward Island's favourable industrial composition (positive industrial mix effect, Table 5-A, Column III), and 505 (96.4 per cent) jobs were accounted for by its comparative advantages (positive differential growth, Table 5-A, Column IV). Unlike the 1961-69 period, Prince Edward Island experienced a net total loss of 171 manufacturing jobs during the 1970-78 period (Table 5-B, Column II). This loss was mainly because of the differential growth, the negative impact of which offset the gains in employment resulting from its favourable industrial mix (see Table 5-B, Column III and IV). When the results of the second period were compared with those of the first period, the following growth patterns were identified. During the second period: (i) although there was an increase in employment gain resulting from a favourable industrial mix, the pattern of net employment growth (net total shift) reversed from positive to negative, and (ii) the differential growth effect also reversed from positive to negative. Although these patterns

of growth may have resulted from Prince Edward Island's pre-existing industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution patterns of RDIA assisted establishments were examined.

4.2.2 Patterns of Structural Changes and the RDIA Grants

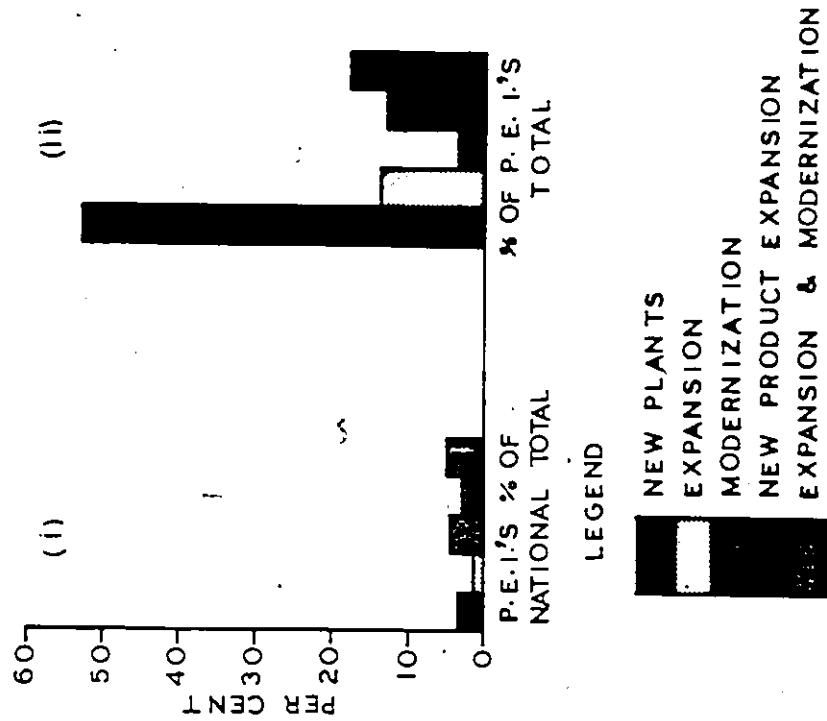
It is revealed by Figure 6 that among the slow growing provinces, Prince Edward Island was the smallest recipient of RDIA grants. The province accounted for 2.9 per cent of net accepted offers, 1.2 per cent of estimated capital cost, 2.0 per cent of incentive grants, and 1.7 per cent of expected new jobs. However, in comparison to its industrial base and population, the province was the largest recipient. For example, the new jobs created by the RDIA grants accounted for about 95.0 per cent of total manufacturing employment in the province (see Appendix A). Furthermore, Prince Edward Island received 133 grants per 100,000 population, which were the highest among all slow growing provinces. Thus the RDIA grants, which were given to Prince Edward Island, were more than sufficient in absolute terms to bring about changes in the industrial structure and to stimulate differential employment growth of the province. In order to determine the impact of RDIA assisted establishments on the structural change and differential employment growth of the province, the distribution patterns of these establishments by various types were examined.

Sector Level Analysis: In order to adjust the industrial structure of the province to the changing patterns of demand, there was a need to attract new establishments and new product expansion. It is evident from Figure 8-A (ii) that about 66.0 per cent of RDIA assisted establishments, which were located in Prince Edward Island, were new plants and new product expansion, a considerable proportion (59.0 and 42.0 per cent respectively) were in the national growth sectors (see Appendix D). This may be one of the reasons why the province experienced some improvement in its industrial mix effect during the second period. However, the employment gains resulting from industrial mix effect were not large enough to offset the employment losses resulting from differential growth (Table 5-B, Columns III and IV).

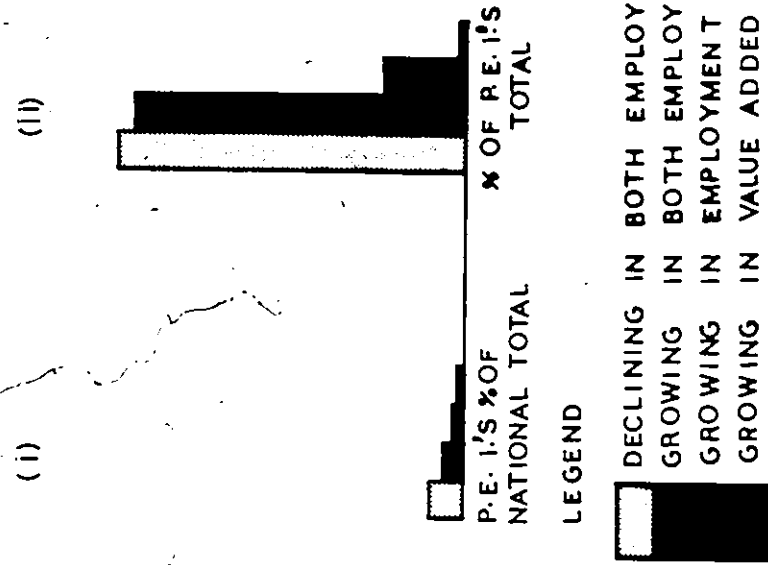
One of the objectives of the RDIA programme is to attract manufacturing establishments and thus to change favourably the industrial structure of slow growing provinces. This could be achieved by injecting national growth industries in a province. Figure 8-B-(ii) indicates that in case of Prince Edward Island, the RDIA programme did just the opposite. It gave 45.3 per cent of grants to industries which were declining nationally not only in employment, but also in value added. It is rather surprising to note that in spite of receiving a high proportion of grants for declining industries, Prince Edward Island did not experience employ-

FIGURE 8-A,B: DISTRIBUTION OF RDIA GRANTS IN PRINCE EDWARD ISLAND BY PROJECT TYPE AND INDUSTRY TYPE: 1970 -78

A:



B:

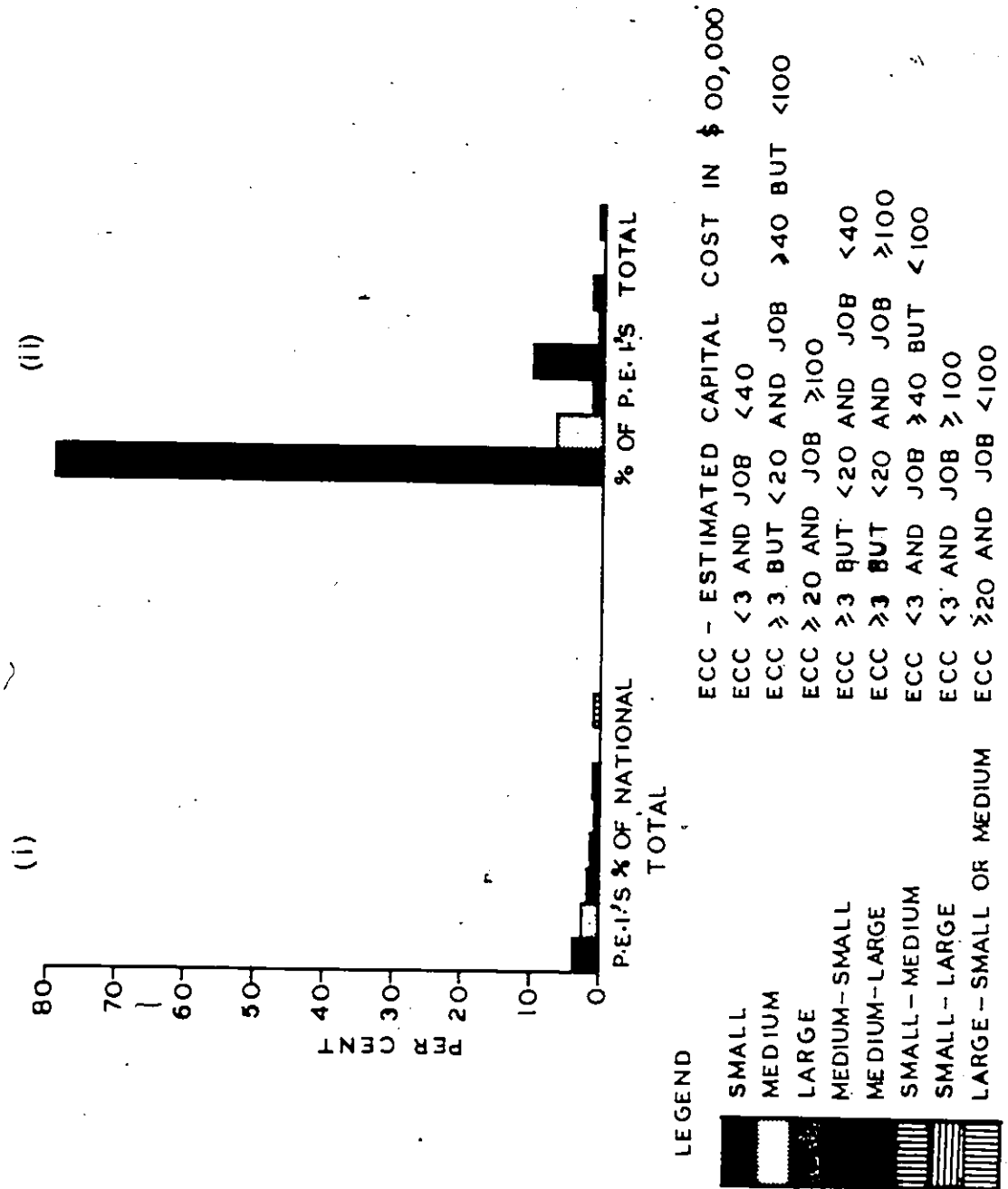


ment loss resulting from industrial mix effect. It was mainly due to only one growth industry, fish products, in which the employment gain was high enough to compensate for employment loss in other industries. (Table 5-B, Column III). However, if this pattern of distribution continues, the industrial structure of Prince Edward Island is going to get worse and the province may experience even more employment losses in future.

Robinson and Storey (1981) have argued that a regional policy should favour small sized establishments, because they happen to be indigenous and have close ties with the regional economy. An examination of Figure 8-C (ii) reveals that 97.4 per cent of RDIA assisted establishments, which were located in Prince Edward Island, were small and medium sized. About 73.0 per cent of these small and medium sized establishments were in the national growth sectors. This may be one of the reasons why Prince Edward Island experienced some increase in employment gain resulting from the industrial mix effect. However, this increment in employment gain was not large enough to offset the employment loss resulting from the differential growth.

In Prince Edward Island the proportionality modification shift reversed from positive during the first period to negative during the second period (see Tables 2-A and 2-B, Column VI). This indicates that the province lost some employment by modifying its industrial structure. This loss

FIGURE 8-C: DISTRIBUTION OF RDIA GRANTS IN PRINCE EDWARD ISLAND BY SIZE OF ESTABLISHMENT: 1970-78



in employment appears to be partly the result of the RDIA programme which attracted manufacturing establishments to the province, a high proportion of which were in the national declining sectors (see Figure 8-B-(ii)).

Disaggregated Level Analysis: The shift and share results at disaggregated level of manufacturing industry are presented in Tables 5-A and 5-B. Column II of these tables indicates that in the case of fish products and the grouped industries, the pattern of net employment growth reversed from positive in the first period to negative in the second period. Although this could be the result of change in their demand and supply conditions, to some extent, it may also have resulted from the effects of the RDIA programme. For example, fish products being a national growth industry was given incentive grants. As a result there was an increase in employment gain resulting from industrial mix. However, this gain was negated by a large employment loss resulting from the differential growth component of the shift/share Index, leaving a net total loss of 179 jobs during the second period (Table 5-B, Column IV). Similarly, the differential growth advantages enjoyed by the grouped industries during the first period no longer existed during the second period. In addition to this, the grouped industries had an unfavourable industrial mix. Hence this category of industries experienced a net total loss of 91 jobs. The employment losses in these industries were large enough to

offset the employment gains in dairy products and commercial printing. Consequently, the pattern of employment growth reversed and the province experienced a net total loss in manufacturing employment during the second period.

Thus, by granting assistance to industries which were declining nationally and/or to industries which had differential growth disadvantages, the RDIA programme appears to have deteriorated the employment growth performance of Prince Edward Island. These results indicate that if the national growth industry in question was not suitable or had a strong comparative disadvantage in a province, as was the case for fish products, the net impact would be some employment loss or a very small employment gain.

4.2.3 Patterns of Differential Employment Growth and the RDIA Grants

In Prince Edward Island the differential growth effect was noted to have reversed from positive in the first period to negative in the second period. Although this pattern of growth may have resulted from some deterioration in access either to inputs or markets of its manufacturing industries, it may also have resulted, to some extent, from the effects of the RDIA programme. In order to explain the association between the RDIA programme and the performance of Prince Edward Island's differential employment growth, the distribution patterns of RDIA assisted establishments were examined.

Table S-C

Distribution of RDIA Grants among Various Industries of Prince Edward Island: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in 1970	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Commercial Printing	(2860)	0	0.0	0	0.0	1.0	GRG
Group: II							
Dairy Products	(1040)	10	6.8	70	2.6	9.3	DRG
Group: III							
Fish Products	(1020)	16	10.8	352	13.2	28.9	GRD
Meat Processors	(1011)	11	7.4	44	1.7	*	GRD
Frozen Fruit & Vegetable	(1032)	8	5.4	176	6.6	*	GRD
Metal Stamping & Coating	(3040)	7	4.7	185	4.0	*	GRD
Sash & Door	(2540)	6	4.1	158	5.9	*	GRD
Misc. Machinery & Equip.	(3150)	4	2.7	44	1.7	*	GRD
Motor Vehicle Parts	(3250)	4	2.7	36	1.4	*	GRD
Misc. Food Processors	(1089)	3	2.0	18	0.7	*	GRD
Ophthalmic Goods	(3914)	3	2.0	87	3.3	*	GRD
Group: IV							
Confectionery	(1081)	30	20.3	600	22.6	*	DRD
Feed Industry	(1060)	4	2.7	24	0.9	*	DRD
Shipbuilding & Repair	(3270)	3	2.0	3	0.1	*	DRD
Clay Products	(3511)	3	2.0	36	1.4	*	DRD
Sub Total		112	75.7	1753	66.0		
The Grouped Ind. & Rest	(9998)	36	24.3	904	34.0	60.8*	RD
Provincial Total		148	100.0	2657	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

DRG = Declining Nationally but Growing Regionally.

RD = Declining Regionally.

There were forty-one industrial categories in Prince Edward Island, which received RDIA grants. Of the forty-one industries, eighteen (about 44.0 per cent) were declining nationally and twenty-three (about 56.0 per cent) were national growth industries, the majority in both categories of industries had a differential growth disadvantage in the province. Table 5-C illustrates this point. It provides a list of those industries which accounted for 75.7 per cent of RDIA grants and were expected to create 66.0 per cent of new jobs. Columns II and V (Group IV) of this table indicate that some grants were given to industries which were not only declining nationally, but also had differential growth disadvantages in the province. The best example is confectionery which received thirty grants. Furthermore, some grants were provided to industries which, although growing nationally, had a differential growth disadvantage and so were experiencing slower employment growth in Prince Edward Island than elsewhere in Canada (Table 5-C, Group III, Columns II and V). It appears from this pattern of distribution that the RDIA programme, instead of investing in industries which had the possibility of providing a more secure future for the province, gave grants to industries which were declining or losing employment.

For further confirmation of the above association, the differential growth in employment of the recipient industries was regressed against the new jobs. As expected

from the distribution pattern of RDIA grants, the coefficient of correlation (Simple $r = -0.19$) and the regression coefficient ($B = -0.04$) were negative. However, statistically they were insignificant. The new jobs explained only about 4.0 per cent of variations in the differential growth. Such results appear to be due to the highly aggregated data. Therefore, for a better understanding of the programme's effectiveness in stimulating differential employment growth of Prince Edward Island, the grouped industries need to be analyzed in detail.

The standardized residuals were examined to investigate other factors which may have affected the differential growth of the province. In the fish products industry, the standardized residual was even greater than -1. The employment loss in this industry was greater than expected. It is noted by DREE (1979c) that the fish products industry in Prince Edward Island is highly dependent on one species; that is, lobster. The depletion in stock of this species may have deteriorated the comparative advantages for fish products and thus caused employment losses.

On the other side of the ledger, the standardized residual in dairy products was nearly +1. The employment gain in this industry was more than expected. It may be due to the fact that Prince Edward Island has a comparative advantage in producing some fodder crops and dairy products (DREE, 1979c). The province may also have some access to

the European Economic Community markets. Thus, access either to inputs or markets and/or comparative advantages appear to have had some impact on differential employment growth of the province.

It appears from the above results that the RDIA programme has done little to improve the industrial structure of Prince Edward Island. By giving grants to industries which were experiencing a slower employment growth in Prince Edward Island than elsewhere in Canada, the programme has not promoted differential employment growth in the province. It is rather less beneficial to attract national growth industries for which there are strong differential growth disadvantages in the province. A better approach would be to support only those industries which are growing nationally and have differential growth advantages in the province. In the short run, the province may benefit by attracting even national declining industries for which there are strong comparative advantages, as was the case for dairy products.

4.3 NEWFOUNDLAND

Prerexisting Industrial Structure: Newfoundland is the second least (next to Prince Edward Island) industrialized province of Canada. However, it is highly specialized in processing of primary products, for which it has comparative advantages. For example, fish products is the largest industrial sector in the province. In 1970, it accounted for about 42.0 per cent of Newfoundland's manufacturing em-

ployment, which rose to about 50.0 per cent in 1978. It is to be noted that fish products is a national growth industry and enjoys comparative advantage from Newfoundland's location on the west coast of the North Atlantic Ocean and near the Gulf of St. Lawrence river. Thus the province appears to have increased its specialization in national growth industries for which it has comparative advantages. It may be due to this reason that Newfoundland improved its industrial mix effect and experienced an increase in net total gain of manufacturing employment during the second period, which were reflected in the shift and share results (discussed below).

Table 6-A

Industrial Patterns of Employment Growth in Newfoundland: 1961-69

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Fish Products	(1110)	+1465	+78.9	+169	+78.2	+1296	+76.5
The Grouped Industries	(9998)	+391	+21.1	+47	+21.8	+344	+20.3
Pulp & Paper Mills	(2710)	-1347	-76.5	-186	-56.2	-1161	-78.3
Sawmills	(2513)	-204	-11.6	-45	-13.6	-159	-10.7
Soft Drink	(1410)	-154	-8.7	-27	-8.2	-127	-8.6
Sash & Door	(2541)	-38	-2.2	-1	-0.3	-36	-2.4
Bakeries	(1290)	-17	-1.0	-72	-21.7	+55	+3.2
Total Gains*		+1856	+100.0	+216	+100.0	+1695	+100.0
Total Losses*		-1760	-100.0	-331	-100.0	-1483	-100.0
Net		+96		-115		+212	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 6-B

Industrial Patterns of Employment Growth in Newfoundland: 1970-78

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Fish Products	(1020)	+2190	+79.0	+1181	+94.7	+1009	+62.1
The Grouped Industries	(9998)	+501	+18.1	-18	-9.4	+519	+31.9
Boatbuilding & Repair	(3280)	+80	+2.9	+2	+0.2	+78	+4.8
Pulp & Paper Mills	(2710)	-550	-75.7	-81	-42.4	-469	-73.6
Publishing & Printing	(2890)	-61	-8.4	-17	-8.9	-44	-6.9
Sawmills	(2513)	-59	-8.1	+65	+5.2	-124	-19.5
Bakeries	(1072)	-57	-7.8	-75	-39.3	+18	+1.1
Total Gains*		+2771	+100.0	+1247	+100.0	+1625	+100.0
Total Losses*		-727	-100.0	-191	-100.0	-637	-100.0
Net		+2044		+1056		+988	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

4.3.1 Regional Patterns of Manufacturing Employment
Growth: 1961-69 and 1970-78

The shift and share results for Newfoundland are presented in Tables 6-A and 6-B. Column II of these tables reveals that Newfoundland experienced a net total gain in manufacturing employment during the 1961-69 period as well as the 1970-78 period. In the first period the province gained only 96 manufacturing jobs. This gain was mainly because of the differential growth, the positive impact of which offset the employment losses resulting from its unfavourable industrial mix (see Table 6-A, Columns III and IV). In the second period Newfoundland's manufacturing employment gain increased to 2044, of which 1,056 (51.7 per cent) jobs were accounted for by its improved industrial mix (Table 6-B, Column III) and 988 (48.3 per cent) jobs were accounted for by its differential growth advantage (Table 6-B, Column IV). When the results of the second period were compared with those of the first period, the following growth patterns were noted. During the second period: (i) there was a tremendous increase in net total gain of manufacturing employment, (ii) there was an improvement in the industrial composition of the province, as a result the industrial mix effect reversed from negative to positive, and (iii) there was about 366.0 per cent increase in employment gain resulting from its differential growth. Although these patterns of growth may have resulted from Newfoundland's pre-existing

industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

4.3.2 Patterns of Structural Changes and the RDIA Grants

It is evident from Figure 6 that among the slow growing provinces, Newfoundland was the second smallest (next to Prince Edward Island) recipient of RDIA grants. The province accounted for only 3.1 per cent of net accepted offers, 2.3 per cent of estimated capital cost, 3.4 per cent of incentive grants, and 2.7 per cent of expected new jobs. However, in comparison to its industrial base and population, these grants were considerable. For example, the new jobs created by these grants accounted for about 26.0 per cent of total manufacturing employment in the province, a percentage which was higher than in Quebec, and Manitoba (see Appendix A). Thus the RDIA grants, which were given to Newfoundland, were sufficient in absolute terms to bring about changes in the industrial structure and to stimulate differential employment growth of the province. In order to determine the impact of RDIA assisted establishments in changing the industrial structure and stimulating the differential employment growth of the province, the distribution patterns of these establishments by various types were examined.

FIGURE 9-A,B: DISTRIBUTION OF RDIA GRANTS IN NEWFOUNDLAND
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78

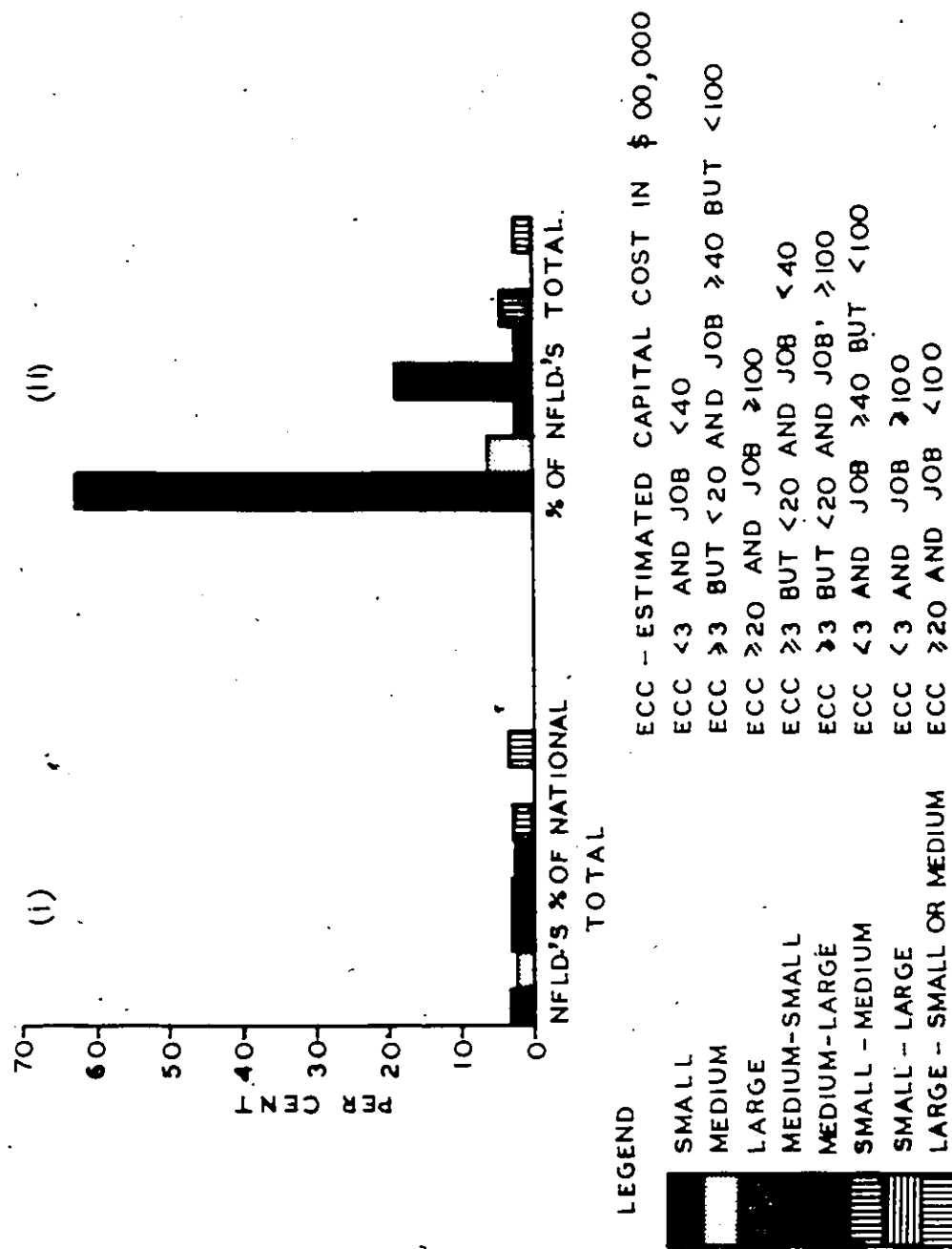


Sector Level Analysis: In order to change the industrial structure of the province to the changing patterns of demand, there was a need to attract new establishments and new product expansion. In fact, about 62.0 per cent of the RDIA assisted establishments, which were located in Newfoundland, were new plants and new product expansion (see Figure 9-A (ii)). It was noted that about 73.0 per cent of new plants and about 94.0 per cent of new product expansion were in the national growth sectors (see Appendix D). It was also noted that the new plants and new product expansion were more job creators than those which received grants for expansion and modernization. This may be one of the reasons why Newfoundland's industrial mix effect improved and reversed from negative to positive during the second period.

It is revealed by Figure 9-B (ii) that in Newfoundland the RDIA programme gave a very high proportion (61.6 per cent) of grants to industries which were growing nationally in employment as well as in value added. In addition, it gave 17.0 per cent of grants to industries which were growing nationally in employment. This may be another reason why Newfoundland improved its industrial mix effect and was experiencing rapid employment growth during the second period.

Figure 9-C (ii) shows that in Newfoundland a very high proportion (92.5 per. cent) of grants were given to small and medium sized establishments. It was noted that

FIGURE 9-C: DISTRIBUTION OF RDIA GRANTS IN NEWFOUNDLAND
BY SIZE OF ESTABLISHMENT: 1970-78



about 85.0 per cent of these establishments were in the category of national growth industries (see Appendix E). This action of the programme appears to have positive impact on the industrial mix of the province and is in agreement with the provincial government's industrial development strategy in which "less emphasis is being placed on the attraction of large scale industrial development" (DREE, 1979d: 31).

Newfoundland experienced a positive proportionality modification shift during the 1961-69 period as well as the 1970-78 period (see Tables 2-A and 2-B, Column VI). This indicates that the province was gaining employment by attracting national growth industries during both periods. However, there was a slight drop in employment gain during the second period. This could be the result of a few declining industries which were attracted to the province by the RDIA programme (see Figure 9-B (ii)). It is interesting to note that this decrease in employment gain was associated with a tremendous increase in employment gain resulting from differential growth (see Tables 2-A and 2-B, Columns VI and VII). This pattern of growth is indicative of the fact that Newfoundland did well even by specializing in nationally declining industries. To some extent, this credit goes to the RDIA programme which gave grants to a few industries which were declining nationally, but had strong comparative advantages in the province and created a high number of jobs (see Table 6-C, Group I-I, Column II and III).

Disaggregated Level Analysis: The shift and share results at a more disaggregated level are presented in Tables 6-A and 6-B. Column II of these tables indicates that Newfoundland did have some industries which were experiencing net employment losses. However, the employment losses in these industries were not high enough to offset the employment gains in other industries. Consequently, the province experienced net employment gain in both periods.

It was noted above that during the second period Newfoundland experienced an increase in net total gain of manufacturing employment. Table 6-B (Column II) shows that fish products, the grouped industries, and boatbuilding and repair were the major contributors to this increase. The fish products industry was a national growth industry and had an increased comparative advantage in the province from an extension of the fishing zone up to 200 miles (see Table 6-C, Column V). It was experiencing net employment gain in both periods and was given the highest number of RDIA grants. It accounted for 55.8 per cent of expected new job to be created in this province (Table 6-C, Column III). Similarly, the category of grouped industries was experiencing net employment gain in both periods. Although this category of industries had an unfavourable industrial mix during the second period, it had a strong differential growth advantage in the province, and hence experienced rapid employment growth (Table 6-B, Columns III and IV). The category of grouped industries was also given a higher number of RDIA grants. The

boatbuilding and repair was also a national growth industry which had a differential growth advantage in the province, and in turn received a significant proportion of grants. By concentrating grants to industries which were growing nationally, and/or industries having a comparative advantage in the province, the RDIA programme appears to be responsible for a tremendous increase (about 2029.0 per cent) in net total gain of manufacturing employment.

Pulp and paper, and sawmills are the industries which were experiencing a very high net total loss of employment in Newfoundland. Although these two industries were losing employment in both periods, there was a considerable drop in their employment losses during the second period (see Tables 6-A and 6-B, Column II). In the case of pulp and paper this drop in employment loss may be the result of increased demand for newsprint and a cheaper supply of hydro power (DREE, 1979d). In the case of sawmills this drop in employment losses appears to be the result of the RDIA programme which provided the second (next to fish products) highest number of grants to this industry (see Table 6-C, Column II). Since the sawmills industry was a national growth industry, the RDIA assisted establishments had some positive impact on its industrial mix which reversed from negative during the first period to positive during the second period.²² Thus, by giving grants to a national growth industry,

²² It is reported by DREE (1979d) that in Newfoundland the sawmills were small sized and run by family enterprises

the RDIA programme appears to have improved the industrial mix which in turn has reduced net employment loss in that industry and improved the growth performance of the province.

4.3.3 Patterns of Differential Employment Growth and the RDIA Grants

It was noted above that during the second period Newfoundland experienced a considerable increase in employment gain resulting from its differential growth. Although this pattern of employment growth may have resulted from improved access either to inputs or markets for its manufacturing industries, it may also have resulted from the effects of the RDIA programme. In order to determine the association between the RDIA programme and the performance of Newfoundland's differential employment growth, the distribution patterns of RDIA assisted establishments were examined.

There were forty-two industrial categories in Newfoundland, which received RDIA grants. Of the the forty-two industries, twenty-eight (about 66.7 per cent) were national growth industries which had differential growth advantages in the province, sawmills being the exception. Even the remaining fourteen (about 33.3 per cent) industries, which were declining nationally, also seemed to have differential growth advantages. Table 6-C illustrates this point. It

as a secondary source of income. This may be one of the reasons why sawmills experienced negative industrial mix during the first period.

Table 6-C

Distribution of RDIA Grants among Various Industries of Newfoundland: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employment in 1970	V Types of Industries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Fish Products	(1020)	55	34.6	2365	55.8	42.4	GRC
Metal Stamping & Coating	(3040)	7	4.4	105	2.5	*	GRC
Meat Processors	(1011)	6	3.8	150	3.5	*	GRC
Frozen Fruit & Veg.	(1032)	5	3.1	50	1.2	*	GRC
Sash & Door	(2540)	5	3.1	55	1.3	*	GRC
Signs & Displays	(3970)	4	2.5	24	0.6	*	GRC
Structural Concrete Prod.	(3542)	3	1.9	33	0.8	*	GRC
Non-Commercial Trailer	(3242)	2	1.3	116	2.7	*	GRC
Household Furniture	(2619)	2	1.3	58	1.4	*	GRC
Plastics Fabricating	(1650)	2	1.3	42	1.0	*	GRC
Misc. Electrical Prod.	(3399)	1	0.6	132	3.1	*	GRC
Boatbuilding & Repair	(3280)	1	0.6	18	0.4	0.1	GRC
Group: II							
Fabricated Struct. Metal	(3020)	7	4.4	105	2.5	*	DRG
Bakeries	(1072)	5	3.1	40	0.9	2.7	DRG
Misc. Paper Converters	(2740)	4	2.5	32	0.8	*	DRG
Dairy Products	(1040)	3	1.9	69	1.6	*	DRG
Shipbuilding & Repair	(3270)	2	1.3	132	3.1	*	DRG
Confectionery	(1081)	2	1.3	94	2.2	*	DRG
Shoe Factories	(1740)	2	1.3	70	1.7	*	DRG
Group: III							
Sawmills	(2513)	12	7.5	252	5.9	1.9	GRD
Sub Total		130	81.8	3942	92.9		
The Grouped Ind. & Rest		29	18.2	300	7.1	52.9*	RG
Provincial Total		159	100.0	4242	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index:

GRC = Growing both Nationally and Regionally.
 GRD = Growing Nationally but Declining Regionally.
 DRD = Declining both Nationally and Regionally.
 DRG = Declining Nationally but Growing Regionally.
 RG = Growing Regionally.

provides a list of those industries which accounted for 81.8 per cent of RDIA grants and were expected to create 92.9 per cent of new jobs. Columns II and V (Group I) of this table indicate that more than two-thirds of the grants were provided to industries which were growing nationally and also had differential growth advantages in the province. Furthermore, it provided some grants to industries which, although declining nationally, nevertheless had a differential growth advantage in the province; that is, they were experiencing faster employment growth in Newfoundland than elsewhere in Canada. From this pattern of distribution, it appears that the RDIA programme did allocate its resources to industries which had the possibility of providing a more secure future for the province. In addition, the grants given to the province were sufficient in absolute terms to stimulate differential employment growth in the province.

In a subsequent analysis, the differential growth in employment of the recipient industries was regressed against new jobs to determine the direction and degree of association between them. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = +0.96$) and the regression coefficient ($B = +0.42$) were positive and statistically significant at .01 level of confidence. The new jobs explained about 93.0 per cent of variations in the differential growth. These results indicate that an improvement in the differential employment growth of Newfoundland may have resulted from the RDIA programme.

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The standardized residuals were then examined to determine if other factors were affecting the differential growth of the province. In boatbuilding and repair, the standardized residual was about +1. The employment gain in this industry was greater than expected. This may be the result of an extension of the fishing zone up to 200 miles, which may have increased fishing activities which in turn may have created demand for fishing boats and vessels. Off-shore oil and gas exploration may also have created demand for off-shore drilling platforms and vessels and thus stimulated employment growth in the boatbuilding and repair.

On the other side of the ledger, the standardized residual in sawmills was greater than -1. The employment loss was more than expected. The depletion of easily accessible forest resources, and an increasing cost of labour and transportation may have put this industry at competitive disadvantage both in the national as well as foreign markets and caused employment losses. Thus accessibility either to inputs or markets appears to be another factor affecting the differential employment growth of the province.

It appears from the above results that the RDIA programme was most successful in changing favourably the industrial structure and stimulating the differential employment growth in Newfoundland. An important lesson to be learned from Newfoundland's case study is that the growth performance of a province can be improved by stimulating resource-

-based industries for which the province has a comparative advantage. The impacts would have been even more spectacular if the resource-based industries had also been national growth industries.

4.4 NEW BRUNSWICK

Pre-existing Industrial Structure: It is evident from Table 1 (Column II) that among the Atlantic provinces, New Brunswick was the most industrialized province. The main reasons for its industrial development were its comparative advantages and rich natural resources. According to a DREE report (1979e), New Brunswick was endowed with rich forest resources - particularly softwood -, had an abundant supply of hydro-electricity, and had good access to tidewater. These factors led to the development of pulp and paper mills, sawmills, and a number of wood industries. Similarly, the soil and climatic factors provided comparative advantages for producing a variety of agricultural products. The DREE report further notes that New Brunswick's coastal location provided access to rich Atlantic fishing grounds. The comparative advantages in agricultural products and fishing led to the development of a food and beverage industry. Thus the industrial structure of New Brunswick is highly specialized in the resource-based industries. More specifically, in 1978 the pulp and paper mill, sawmills, other wood industries, and the food and beverage industry

accounted for about 61.0 per cent of total manufacturing employment in the province.

It is to be noted that New Brunswick was doing well as long as it had comparative advantages. According to DREE (1979e), in recent years the situation has changed. The province has lost its advantage in hydro-electricity. The majority of its resource-based industries are energy-intensive and now depend on oil generated electric power. With the increase in oil prices, they faced higher energy cost as well as a higher transportation cost. DREE further notes that because of the small domestic market, its products have limited scope for expansion. Furthermore, some of its products are subject to higher tariff barriers and so have become less competitive on foreign markets. Finally, because of its specialization in resource-based industries and heavy dependence on foreign markets, especially the United States, the economic activities in the province are prone to cyclical fluctuations. These facts clearly indicate that New Brunswick's comparative and competitive advantages have deteriorated in recent years. It thus may be due to these factors that New Brunswick experienced negative differential growth during the second period, which in turn reversed the patterns of employment growth from a net gain to a net loss. It was quite evident in the shift and share results (discussed below).

Table 7-A

Industrial Patterns of Employment Growth in New Brunswick: 1961-69

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
The Grouped Industries	(9998)	+1384	+68.0	+583	+56.3	+1002	+52.8
Fish Products	(1110)	+291	+14.3	+136	+20.0	+155	+8.2
Concrete Products	(3470)	+152	+7.5	-5	-0.3	+157	+8.3
Machine Shops	(3080)	+116	+5.7	+157	+23.1	-41	-8.0
Pulp & Paper Mills	(2710)	-453	-31.2	-236	-15.8	-217	-42.2
Sawmills	(2513)	-309	-21.3	-421	-28.4	+112	+5.9
Bakeries	(1290)	-178	-12.2	-240	-16.2	+62	+3.3
Printing & Publishing	(2890)	-155	-10.7	-131	-8.8	-24	-4.7
Feed Manufacturers	(1230)	-125	-8.6	-39	-2.6	-85	-16.5
Dairy Factories	(1050)	-51	-3.5	-237	-16.0	+187	+9.8
Meat Processors	(1010)	-19	-1.3	-101	-6.8	+82	+4.3
Total Gains*		+2035	+95.5	+680	+99.4	+1899	+92.6
Total Losses*		-1454	-88.8	-1485	-94.9	-514	-71.4
Net		+581		-805		+1385	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 7-B

Industrial Patterns of Employment Growth in New Brunswick: 1970-78

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
The Grouped Industries	(9998)	+1250	+82.9	-121	-13.3	+1371	+78.5
Publishing & Printing	(2890)	+163	+10.8	-33	-3.6	+196	+11.2
Fish Products	(1020)	+22	+1.5	+701	+43.7	-679	-25.8
Sawmills	(2513)	-755	-44.6	+739	+46.0	-1493	-56.8
Bakeries	(1072)	-332	-19.6	-207	-22.8	-125	-4.8
Dairy Products	(1040)	-236	-13.9	-208	-22.9	-28	-1.1
Machine Shops	(3080)	-160	-9.6	-102	-11.3	-58	-2.2
Pulp & Paper Mills	(2710)	-53	-3.1	-150	-16.5	+97	+5.6
Total Gains*		+1507	+95.2	+1605	+89.7	+1747	+95.3
Total Losses*		-1693	-90.8	-907	-90.4	-2631	-90.7
Net		-186		+698		-884	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

It was noted above that in manufacturing employment, New Brunswick experienced a net total loss (Figure 4-B), whereas in value added by manufacture, it experienced a net total gain (Figure 5-B). Since the province is heavily concentrated in resource-based industries which tend to be capital-intensive, the application of modern technology may have increased productivity at the cost of employment.

4.4.1 Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78

The shift and share results for New Brunswick are presented in Tables 7-A and 7-B. Column II of Table 7-A shows that New Brunswick experienced a net total gain of 581 manufacturing jobs during the 1961-69 period. This gain was mainly because of the differential growth, the positive impact of which offset the employment losses resulting from its unfavourable industrial mix (Table 7-A, Columns III and IV). Unlike the 1961-69 period, New Brunswick experienced a net total loss of 186 manufacturing jobs during the 1970-78 period (Table 7-B, Column II). This loss was the result of differential growth, the negative impact of which offset the employment gains resulting from its improved industrial mix (Table 7-B, Columns III and IV). When the results of the second period were compared with those of the first period, the following growth patterns were noticed. During the second period: (i) there was a definite improvement in the industrial composition of the province, as a result of which

the industrial mix effect reversed from a negative to positive value, and (ii) there was a definite deterioration in the comparative advantages of the province, as a result of which the differential growth effect reversed from positive to negative, which in turn reversed the pattern of net employment growth in the province from positive to negative. Although these patterns of growth may have resulted from New Brunswick's pre-existing industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

4.4.2 Patterns of Structural Changes and the RDIA Grants

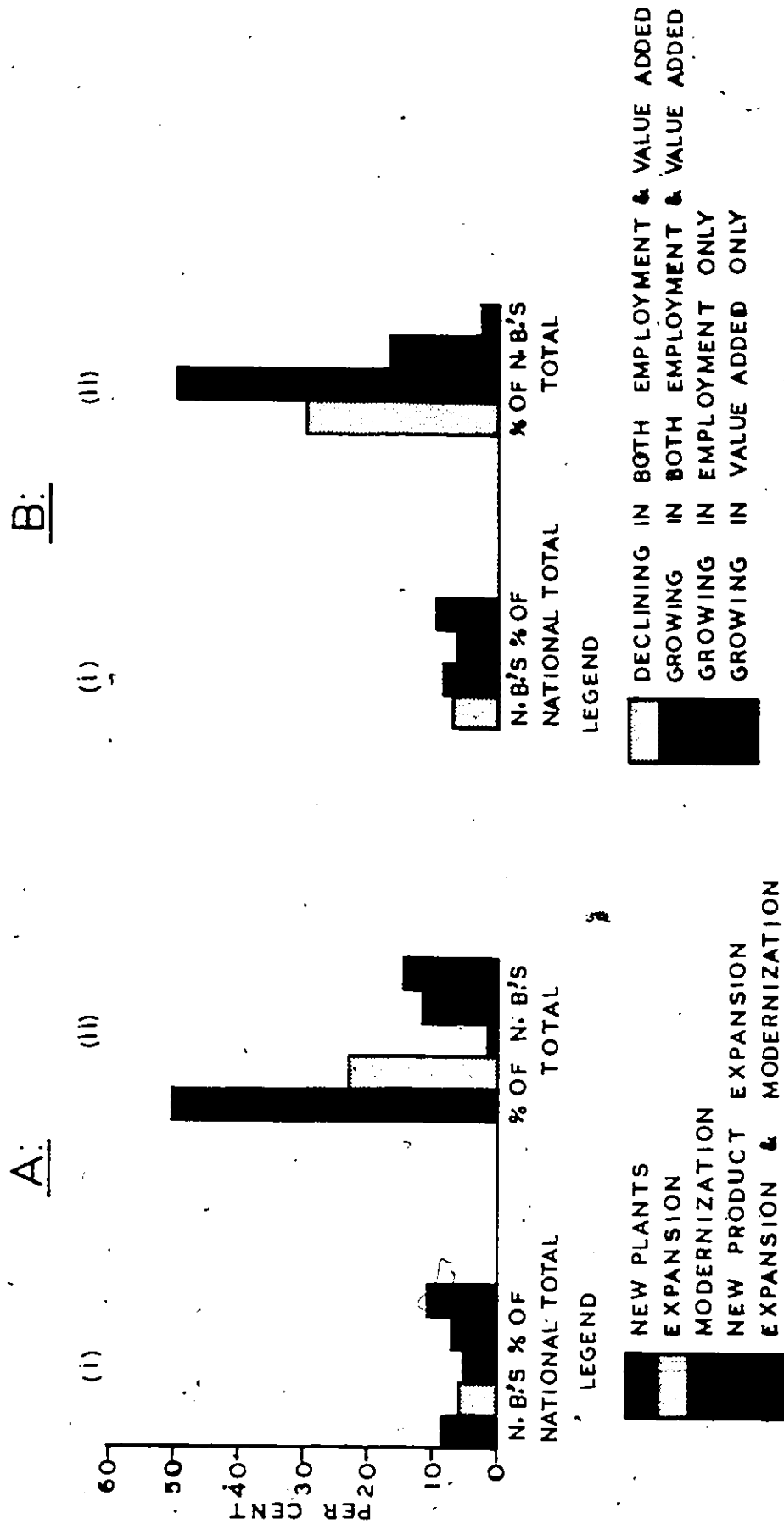
Figure 6 indicates that among the slow growing provinces, New Brunswick was the fourth largest recipient of RDIA grants. The province accounted for 7.6 per cent of net accepted offers, 6.7 per cent of estimated capital cost, 9.5 per cent of incentive grants, and 7.5 per cent of expected new jobs. However, in comparison to its industrial base and population, the province was the second largest recipient. For example, the new jobs created by the RDIA grants accounted for about 38.0 per cent of total manufacturing employment in the province. (see Appendix A). Furthermore, Newfoundland received 62 grants per 100,000 population, a rate which was again the second highest among the slow growing provinces. Thus the RDIA grants, which were given to New Brunswick, were sufficient in absolute terms to bring

about changes in the industrial structure and to stimulate differential employment growth of the province. In order to determine the impact of RDIA assisted establishments on the structural change and the differential employment growth of the province, the distribution patterns of these establishments by various types were examined.

Sector Level Analysis: In order to adjust the industrial structure of New Brunswick to the changing patterns of demand, there was a need to attract new establishments and new product expansion. An examination of Figure 10-A (ii) reveals that about 61.0 per cent of RDIA assisted establishments, which were located in this province, were new plants and new product expansion, the vast majority (about 71.0 and 66.0 per cent respectively) of which were in the national growth sectors (see Appendix D). This may be one of the reasons why New Brunswick's industrial mix effect reversed from negative during the first period to positive during the second period.

One of the objectives of RDIA programme is to attract manufacturing establishments and thus to change favourably the industrial structure of slow growing provinces. This could be achieved by injecting growth industries in a province. An examination of Figure 10-B (ii) reveals that the RDIA programme did what was needed. It gave 49.7 per cent of grants to industries which were growing nationally in employment as well as in value added, and 19.3 per cent of

FIGURE 10-A,B: DISTRIBUTION OF RDIA GRANTS IN NEW BRUNSWICK
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78

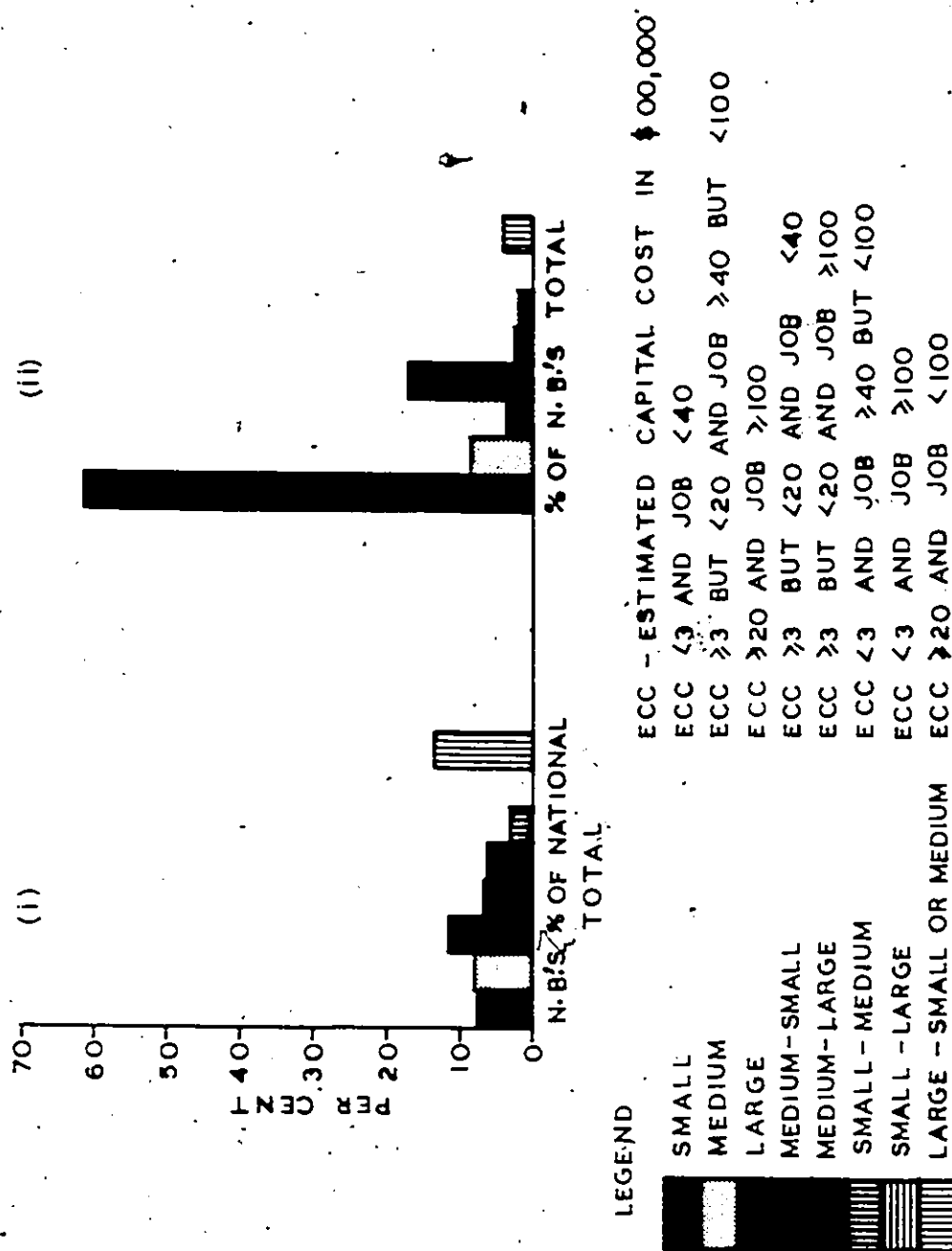


grants to industries which were growing nationally in either employment or value added. This may be another reason why New Brunswick's industrial mix improved and reversed from being negative during the first period to positive during the second period..

Figure 10-C (ii) shows that in New Brunswick a very high proportion (89.5 per cent) of grants were given to small and medium sized establishments. It was noted that about 71.0 per cent of these establishments could be categorized as national growth industries (see Appendix E). It may be for this reason that the industrial mix of the province also reversed from being negative to positive during the second period. This action of the programme was in accordance with the provincial government's industrial development strategy in which "Considerable emphasis has been placed on small business development as a means of attaining the employment creation objectives for the manufacturing sector and the economy" (DREE 1979e: 29).

It is to be noted that in New Brunswick the proportionality modification shift reversed from positive during the first period to negative during the second period (see Tables 2-A and 2-B, Column VI). This indicates that the province lost some employment by modifying its industrial structure. This employment loss could be partly the result of the RDIA programme which provided grants to some declining industries in the province (Figure 10-B (ii)). However,

FIGURE 10-C: DISTRIBUTION OF RDIA GRANTS IN NEW BRUNSWICK
BY SIZE OF ESTABLISHMENT: 1970-78



the other factors affecting the proportionality modification shift of the province appear to be the depletion of natural resources, higher energy and transportation costs, and a few structural problems (discussed below).

Disaggregated Level Analysis: The shift and share results at disaggregated level of manufacturing industry are presented in Tables 7-A and 7-B. Table 7-B (Column II) reveals that the category of grouped industries, publishing and printing, and fish products, with 95.2 per cent of total employment gains, were the important industries which experienced net employment gains in the province during the second period. However, the employment gains in these industries were not large enough to offset the employment losses in other industries, such as sawmills, bakeries, dairy products, machine shops, and pulp and paper mills. Consequently, the province experienced a net total loss in manufacturing employment.

Table 7-B (Column III) shows that fish products and sawmills were mainly responsible for improving the industrial mix of the province and reversing it from negative to positive during the second period. It is to be noted that these two industries were national growth industries and provided the highest number of RDIA grants (see Table 7-C). Hence they may have experienced considerable employment gains and improved the industrial mix of the province. However, this progressive element of the programme and the em-

ployment gains which resulted were outweighed by a deterioration in comparative advantages of these industries. For example, it is reported by DREE (1979e) that in New Brunswick there was decline in fish stocks, the seasonal operation of fish processing plants, shortages of cold-storage facilities, freezer trawlers, large vessels, ice-breakers, an inadequate trucking system, and high transportation costs. As a result of these factors, the fish products industry appears to have experienced employment losses which negated most of its employment gains resulting from the industrial mix component of the shift/share index, leaving a small net employment gain (Table 7-B, Columns, II, III and IV). Similarly, because of a shortage of quality sawlogs, higher energy and transportation costs, tariff barriers, and a heavy dependence on one foreign market, the United States (DREE, 1979e), the sawmills industry appears to have experienced employment losses which were high enough to offset the employment gains resulting from industrial mix component of the shift/share index, leaving large net employment losses (Table 7-B, Column II, III and IV). Thus, by giving a higher number of grants to these two growth industries, the RDIA programme appears to have improved the industrial mix of the province and reduce net total loss in manufacturing employment.

In the case of bakeries, dairy products, and machine shops, the RDIA programme appears to have adopted a defen-

sive policy. In spite of being national declining industries, these industries were provided RDIA grants. This may be one of the reasons that the net employment losses in bakeries and dairy products increased, and the net employment gain in machine shops changed to net employment loss during the second period (see Tables 7-A and 7-B, Column II). To some extent, an increase in employment losses of bakeries and dairy products appears to be the result of deterioration in their differential growth advantages during the second period (Tables 7-A and 7-B, Column IV).

It was noted that in the case of publishing and printing, the pattern of net employment growth changed from negative to positive, whereas in the case of pulp and paper mills, the net employment loss dropped from 453 jobs to only 53 jobs during the second period (see Tables 7-A and 7-B, Column II). Thus there was some improvement in the growth performance of these two industries. This improvement appears to be the result of increased demand for newsprint and the devaluation of the Canadian dollar, and thus independent of the RDIA programme's effects.

4.4.3 Patterns of Differential Employment Growth and the RDIA Grants

It was noted above that in New Brunswick, the pattern of differential growth reversed from positive during the first period to negative during the second period. In order to explain the association between this pattern of growth

and the RDIA programme, the distribution patterns of RDIA assisted establishments were examined below.

There were ninety-four industrial categories in New Brunswick, which received RDIA grants. Of the ninety-four industries, fifty-nine (62.8 per cent) were national growth industries and thirty-five (37.2 per cent) were declining, the majority in both categories of industries had differential growth advantages in the province. Table 7-C provides a list of those industries which accounted for 70.3 per cent of RDIA grants and were expected to create 74.4 per cent of new jobs. Columns II and V (Group I) of this table indicate that the RDIA grants were given to a larger number of industries which were not only national growth industries, but also had differential growth advantages in the province. Furthermore, Columns II and V (Group II) of this table indicate that some of grants were given to industries which were declining nationally, but had differential growth advantages in the province. By contrast, Columns II and V (Group IV) indicate that the RDIA grants were given to few industries which were both declining nationally and had differential growth disadvantages in the province. It is evident from this pattern of distribution that the RDIA programme did invest in industries which had the possibility of providing a more secure future for the province. In addition, the grants given to the province were sufficient in absolute terms to stimulate differential employment growth in the

Table 7-C

Distribution of RDIA Grants among Various Industries of New Brunswick: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in 1970	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Sash & Door	(2540)	22	5.6	426	3.6	*	GRG
Household Furniture	(2619)	14	3.6	420	3.6	*	GRG
Misc. Machinery & Equip.	(3150)	10	2.6	230	2.0	*	GRG
Structural Concrete Prod.	(3542)	10	2.6	80	0.7	*	GRG
Plastics Fabricating	(1650)	9	2.3	153	1.3	*	GRG
Metal Stamping & Coating	(3040)	5	1.3	140	1.2	*	GRG
Boatbuilding & Repair	(3280)	5	1.3	170	1.4	*	GRG
Signs & Displays	(3970)	4	1.0	72	0.6	0.2	GRG
Metal Door & Window	(3031)	4	1.0	208	1.8	*	GRG
Ophthalmic Goods	(3914)	3	0.8	207	1.8	*	GRG
Misc. Metal Fabricating	(3090)	2	0.5	208	1.8	*	GRG
Toilet Preparations	(3770)	1	0.3	315	2.7	*	GRG
Pulp & Paper Mills	(2710)	1	0.3	7	0.1	18.1	GRG
Group: II							
Misc. Wood Industries	(2599)	11	2.8	352	3.0	0.2	DRG
Confectionery	(1081)	10	2.6	280	2.4	*	DRG
Soft Drink	(1091)	6	1.5	96	0.8	1.6	DRG
Misc. Furniture	(2660)	5	1.3	100	0.8	*	DRG
Fabricated Struct. Metal	(3020)	5	1.3	70	0.6	*	DRG
Electrical Ind. Equip.	(3360)	4	1.0	324	2.7	*	DRG
Shipbuilding & Repair	(3270)	3	0.8	618	5.2	*	DRG
Knitting Mills	(2390)	2	0.5	396	3.4	*	DRG
Filament Yarn Mills	(1830)	1	0.3	426	3.6	*	DRG
Group: III							
Fish Products	(1020)	44	11.3	1540	13.1	11.3	GRD
Sawmills	(2513)	37	9.5	1221	10.4	9.6	GRD
Meat Processors	(1011)	12	3.1	156	1.3	1.9	GRD
Commercial Printing	(2860)	11	2.8	66	0.6	0.8	GRD
Misc. Food Processors	(1089)	6	1.5	234	2.0	1.5	GRD
Group: IV							
Dairy Products	(1040)	12	3.1	84	0.7	3.4	DRD
Machine Shops	(3080)	8	2.1	88	0.7	1.4	DRD
Bakeries	(1072)	7	1.8	84	0.7	3.3	DRD
Sub total		274	70.3	8771	74.4		
The Grouped Ind. & Rest. (9998)		116	29.7	3016	25.6	46.7*	RG
Provincial Total		390	100.0	11787	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

DRG = Declining Nationally but Growing Regionally.

RG = Growing Regionally.

province. It is rather surprising to note that, in spite of this action of the RDIA programme, the pattern of differential employment growth reversed from positive to negative during the second period. This appears to be mainly because of deterioration in comparative advantages (as noted above) of fish products and sawmills (see Tables 7-A and 7-B, Column IV).

The differential growth in employment of the recipient industries was regressed against the new jobs to determine the direction and degree of association between them. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = +0.54$) and the regression coefficient ($B = +0.16$) were positive and statistically significant at .05 level of confidence. The new jobs explained about 29.0 per cent of variations in the differential growth. These results indicate that, to some extent, the RDIA programme may have stimulated the differential employment growth in New Brunswick. However, there appear to be other important factors affecting the differential employment growth in the province, because a very high percentage of variation remains unexplained.

The standardized residuals were examined to investigate other factors affecting the differential employment growth in the province. The standardized residuals were less than + 1 in all industries of New Brunswick, except for sawmills and fish products in which the standardized residu-

als were -1.5 and -3.0 respectively. The very high negative residuals clearly indicate that in these two industries the employment losses were greater than expected. As noted above, this could be the result of a deterioration in their comparative advantages (i.e. shortage of quality sawlogs, depletion in fish stocks, etc.) or a deterioration in their access either to inputs or markets. These factors were strong enough to reverse the pattern of differential employment growth from a net gain to a net loss during the second period. This in turn compensated for the employment gains resulting from improved industrial mix and reversed the pattern of employment growth in the province from a net total gain during the first period to a net total loss during the second period.

It appears from the above results that the RDIA programme was successful in changing favourably the industrial structure of New Brunswick. The programme also appears to have stimulated the differential employment growth in some industries. However, it was not sufficient to offset the employment losses that resulted from deterioration in comparative advantages for fish products and sawmills. In order to improve the differential employment growth in New Brunswick, these two industries need special attention, especially in respect to negative trends which were identified above in this section. A lesson to be learned from New Brunswick's case study is that the industrial mix of a province could be improved by injecting national growth indus-

tries, as was the case for fish products and sawmills. However, for improving an overall growth performance of a province, such growth industries must have comparative advantages in the province.

4.5 NOVA SCOTIA

Pre-existing Industrial Structure: It is evident from Table 1 (Column II) that among the Atlantic provinces, Nova Scotia is the second most industrialized province (next to New Brunswick). Its industrial development was the result of the exploitation and export of natural resources. A variety of agricultural products led to the development of food and beverage industries which, in 1978, accounted for about one-third of manufacturing employment in the province. Its coastal location provided access to the Atlantic fishing grounds, which led to the development of fish processing plants and a number of related industries, such as boat-building and repair, and shipbuilding and repair. In addition to these, the extraction of coal from the Sydney-Donkin area and the access to forest resources led to the development of iron and steel mills, wood industries, and pulp and paper mills. Thus, Nova Scotia's industrial structure was made up of resource-based industries as well as a few non-resource-based industries, and contained an above average proportion of national declining industries, and/or industries which were growing slower in Nova Scotia than else-

where in Canada (see Table 8-A). However, in recent years this province has tended to increase its specialization in national growth industries, and/or industries which were growing more rapidly in Nova Scotia than elsewhere in Canada (see Tables 8-B and 8-C). It may be due to these reasons that in Nova Scotia the industrial mix as well as the differential growth effects improved and the pattern of employment growth reversed from a net total loss during the first period to a net total gain during the second period, which were reflected in shift and share results (discussed below).

4.5.1 Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78

The shift and share results for Nova Scotia are presented in Tables 8-A and 8-B. Column II of Table 8-A shows that Nova Scotia experienced a net total loss of 1,231 manufacturing jobs during the 1961-69 period. Of the 1,231 jobs, 817 (66.4 per cent) jobs were lost due to its adverse industrial composition (Table 8-A, Column III), and 414 (33.6 per cent) jobs were lost as the result of its differential growth disadvantages (Table 8-A, Column IV). Unlike the 1961-69 period, Nova Scotia improved its position during the 1970-78 period and experienced a net total gain of 1,417 manufacturing jobs (Table 8-B, Column II). Of the 1,417 jobs, 495 (34.9 per cent) jobs were accounted for by Nova Scotia's improved industrial composition (Table 8-B, Column III), and 922 (65.1 per cent) jobs were accounted for by its improved differential growth (Tables 8-B, Column IV). When

the results of the second period were compared with those of the first period, the following growth patterns were identified. During the second period: (i) the pattern of employment growth reversed from a net total loss to a net total gain, (ii) there was an improvement in the industrial composition of the province, the negative impact of which reversed to positive, and (iii) there was also an improvement in the differential employment growth of the province, the negative impact of which also reversed to positive. Although these patterns of growth may have resulted from Nova Scotia's pre-existing industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

Table 8-A

Industrial Patterns of Employment Growth in Nova Scotia: 1961-69

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Pulp and Paper Mills	(2710)	+596	+49.9	-67	-3.5	+663	+40.2
Fish Products	(1110)	+332	+27.8	+225	+20.5	+106	+6.4
Boatbuilding & Repair	(3280)	+32	+2.7	+103	+9.4	-71	-3.4
Misc. Food Industries	(1390)	+29	+2.4	+0	+0.0	+29	+1.8
The Grouped Industries	(9998)	-399	-16.5	+443	+40.3	-842	-40.8
Shipbuilding & Repair	(3270)	-378	-15.6	-459	-23.9	+82	+5.0
Sawmills	(2513)	-355	-14.6	-300	-15.7	-55	-2.7
Sash & Door	(2541)	-350	-14.4	-6	-0.3	-344	-16.7
Dairy Factories	(1050)	-206	-8.5	-409	-21.3	+203	+12.3
Commercial Printing	(2860)	-157	-6.5	-23	-1.2	-134	-6.5
Men's Clothing	(2431)	-154	-6.3	-33	-1.7	-122	-5.9
Printing & Publishing	(2890)	-119	-4.9	-167	-8.7	+49	+3.0
Bakeries	(1290)	-43	-1.8	-231	-12.1	+188	+11.4
Machine Shops	(3080)	-29	-1.2	+134	+12.2	-163	-7.9
Misc. Machinery & Equip.	(3150)	-40	-1.6	+134	+12.2	-174	-8.4
Total Gains*		+1195	+82.8	+1100	+94.6	+1650	+80.1
Total Losses*		-2426	-91.9	-1917	-88.4	-2064	-92.3
Net		-1231		-817		-414	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 8-B

Industrial Patterns of Employment Growth in Nova Scotia: 1970-78

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
The Grouped Industries	(9998)	+3830	+77.1	+111	+6.2	+3718	+85.7
Fish Products	(1020)	+614	+12.4	+977	+54.8	-363	-10.6
Misc. Food Processors	(1089)	+271	+5.5	+42	+2.4	+228	+5.3
Pulp & Paper Mills	(2710)	+179	+3.6	-64	-5.0	+242	+5.6
Shipbuilding & Repair	(3270)	-1635	-46.1	-255	-19.8	-1380	-40.4
Sawmills	(2513)	-518	-14.6	+439	+24.6	-957	-28.0
Dairy Products	(1040)	-423	-11.9	-321	-24.9	-102	-3.0
Bakeries	(1072)	-326	-9.2	-226	-17.6	-100	-2.9
Publishing & Printing	(2890)	-140	-4.0	-46	-3.6	-93	-2.7
Fruit & Veg. Canners	(1031)	-88	-2.5	-158	-12.3	+70	+1.6
Total Gains*		+4965	+98.6	+1782	+88.0	+4338	+98.2
Total Losses*		-3548	-88.3	-1287	-83.2	-3416	-87.6
Net		+1417		+495		+922	

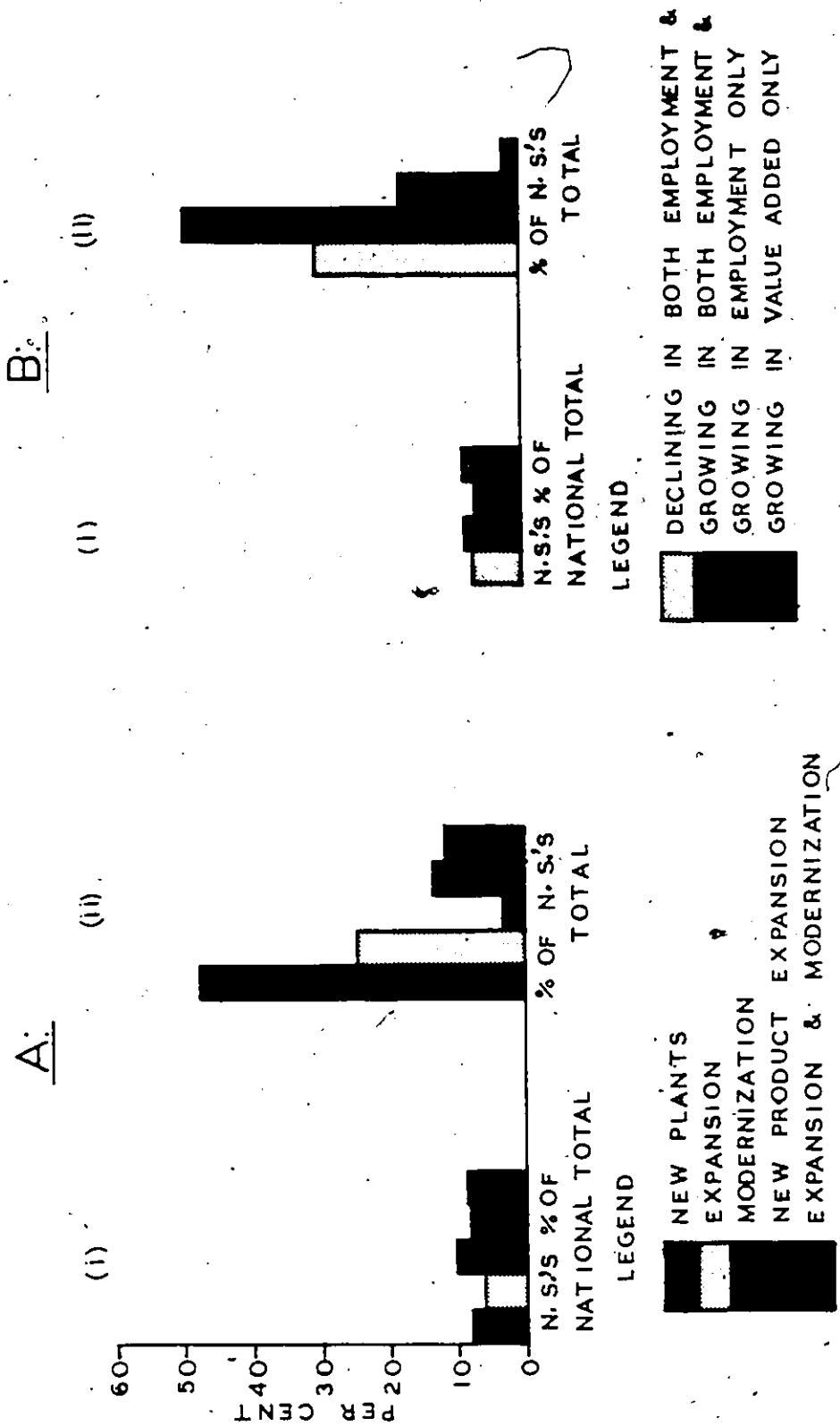
Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

4.5.2 Patterns of Structural Changes and the RDIA Grants

It is shown by Figure 6 that among the slow growing provinces, Nova Scotia was the third largest recipient of RDIA grants. The province accounted for 7.6 per cent of net accepted offers, 9.7 per cent of estimated capital cost, 10.8 per cent of incentive grants, and 7.3 per cent of expected new jobs. In comparison to its industrial base and population, these grants were considerable. For example, the new jobs created by these grants accounted for about 32.0 per cent of total manufacturing employment in the province (see Appendix A). Furthermore, Nova Scotia received 50 grants per 100,000 population, a rate which was higher than in Quebec, Newfoundland, and Saskatchewan. Thus the RDIA grants, which were given to Nova Scotia, were sufficient in absolute terms to bring about changes in the industrial structure and to stimulate differential employment growth of the province. For determining the impact of RDIA assisted establishments on the structural change and the differential employment growth of the province, the distribution patterns of these establishments by various types were examined.

Sector Level Analysis: For adjusting the industrial structure of Nova Scotia to the changing patterns of demand, there was a need to attract new establishments and new product expansion. An examination of Figure 11-A (ii) reveals that about 61.0 per cent of RDIA assisted establishments,

FIGURE 11-A,B: DISTRIBUTION OF RDIA GRANTS IN NOVA SCOTIA
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78



which were located in this province, were new plants and new product expansion, the vast majority (about 67.0 and 79.0 per cent respectively) of which were in the national growth sectors (see Appendix D). This may be one of the reasons why Nova Scotia's industrial mix effect reversed from negative during the first period to positive during the second period.

One of the objectives of RDIA programme is to attract manufacturing establishments and thus to change favourably the industrial structure of slow growing provinces. This could be achieved by injecting national growth industries in a province. An examination of Figure 11-B (ii) indicates that the RDIA programme did what was needed. It gave 49.0 per cent of grants to industries which were growing nationally in employment as well as in value added, and 19.9 per cent of grants to industries which were growing nationally in either employment or value added. This may be another reason why Nova Scotia's industrial mix improved and reversed from negative during the first period to positive during the second period.

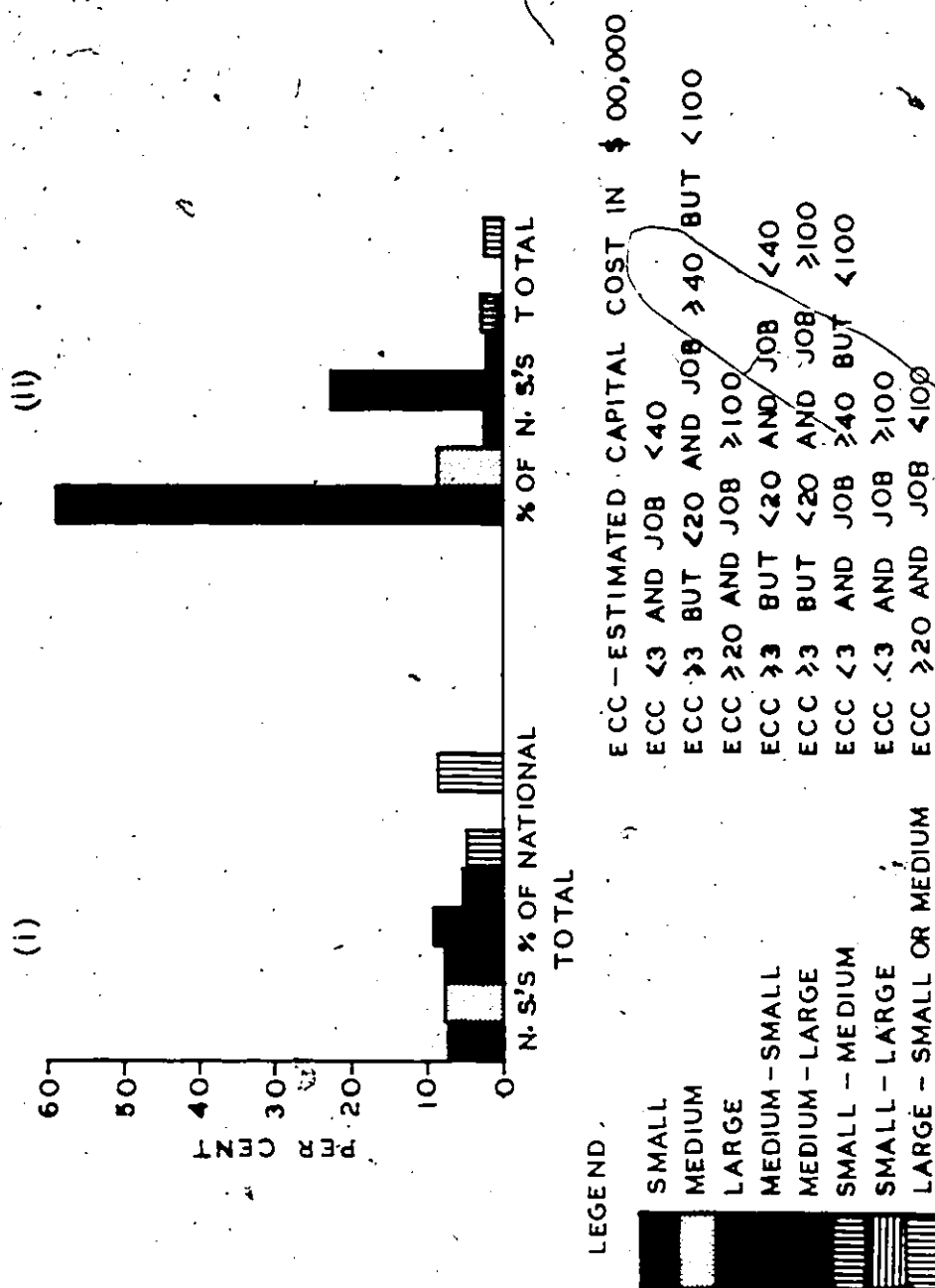
It is evident from Figure 11-C (ii) that in Nova Scotia a very high proportion (92.8 per cent) of grants were given to small and medium sized establishments. It was noted that about 74.0 per cent of these establishments were in the category of national growth industries (see Appendix E). It may be for this reason too that the industrial mix of

Nova Scotia reversed from negative during the first period to positive during the second period.

In Nova Scotia the proportionality modification shift was found to be negative during the first period as well as the second period (see Tables 2-A and 2-B, Column VI). This pattern of growth indicates that even during the second period Nova Scotia did attract some national declining industries, and as a result lost 116 manufacturing jobs (Figure 11-B (ii)). It may be indicative of a bleak future. However, a low negative proportionality modification shift accompanied by a high positive differential growth indicates that Nova Scotia did well during the second period even by specializing in nationally declining industries for which it had comparative advantages. To some extent, this credit goes to the RDIA programme which gave grants to a few industries which, although declining nationally, had a differential growth advantage in the province and created a very high number of jobs (see Table 8-C, Group II, Columns II and III).

Disaggregated Level Analysis: The shift and share results at disaggregated level of manufacturing industry are presented in Tables 8-A and 8-B. It is to be noted that these tables do not provide a complete list of all industries in the province, but list only those industries which experienced large employment gains or losses and had significant influence on the provincial growth performance. Table

FIGURE 11-C: DISTRIBUTION OF RDIA GRANTS IN NOVA SCOTIA
BY SIZE OF ESTABLISHMENT: 1970-78



8-B (Columns I and II) shows that shipbuilding and repair, sawmills, dairy products, bakeries, publishing and printing, and fruit and vegetable canners were the largest net employment loser in the province. They accounted for 88.3 per cent of total employment losses in the province. However, the net employment losses in these industries were not large enough to offset the net employment gains in the grouped industries, fish products, miscellaneous food processors, and pulp and paper mills. Consequently, the pattern of employment growth reversed from a net total loss to net total gain during the second period.

The category of grouped industries was the largest contributor to the net total gain in manufacturing employment of the province. In this category of industries the pattern of net employment growth reversed from negative during the first period to positive during the second period (Tables 8-A and 8-B, Column II). It appears to be the result of the RDIA programme which provided grants to this category of industries, the majority of which were national growth industries and/or had differential growth advantages in the province (see Table 8-C, Columns IV and V). Thus, by giving grants to national growth industries and/or industries having differential growth advantages in the province, the RDIA programme appears to have improved the growth performance of the province.

Fish products, miscellaneous food processors, and pulp and paper mills were the other major contributors to the net total gain in manufacturing employment of the province. It is to be noted that these industries were experiencing net employment gains during both periods, were national growth industries, and were provided a higher number of RDIA grants (see Tables 8-A and 8-B, Column II; Table 8-C, Columns II and V). It is evident from this result that in the case of Nova Scotia, the RDIA programme had supported a trend toward growing industries, and thus improved the growth performance of the province.

An examination of Table 8-B (Column III) reveals that fish products and sawmills were mainly responsible for improving the industrial mix of Nova Scotia and reversing it from negative to positive during the second period. These two industries were national growth industries and accounted for 79.4 per cent total employment gains resulting from the industrial mix component of shift/share index. Table 8-C (Group III, Column II) shows that these two industries were also the largest recipient of RDIA grants in the province. It appears from this result that by injecting national growth industries, the RDIA programme was successful in improving the industrial mix of this province.

It was noted above that in Nova Scotia a low negative proportionality modification shift is accompanied by a very high positive differential growth. To some extent, this may

have resulted from communications equipment and rubber products industries (e.g. Michelin Tires)²² which were provided RDIA grants. These two non-resource-based industries which, although declining nationally, had a differential growth advantage in the province, and created a very high number of jobs (Table 8-C, Group II, Column III).

Except for these progressive attempts, in a few cases, such as shipbuilding and repair, dairy products, bakeries, and fruit and vegetable canners, the RDIA programme appears to have adopted a defensive policy. In spite of being declining industries, they were provided RDIA grants. It may be for this reason that in these industries, net employment losses increased during the second period. The increase in the net employment losses of shipbuilding and repair, dairy products, bakeries, and publishing and printing may have also resulted from deterioration in their differential growth advantages in the province. Since the employment losses in these industries were offset by employment gains in other industries which were given a higher number of grants, the overall impact of the RDIA programme appears to be positive in changing the industrial structure and improving the net pattern of employment growth of the prov-

²² Michelin Tires (Canada) Limited, which was located in Nova Scotia in 1971, was expected to invest 52.0 million dollars in May 1972 and June 1976, to receive from the RDIA programme 10.2 million dollars as incentive grants for new product expansion, and to create 1,548 new jobs. In this multinational firm the employment increased from initial 1,000 persons to over 3,000 persons by 1978 (DREE, 1979f).

Table 8-C

Distribution of RDIA Grants among Various Industries of Nova Scotia: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in 1970	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Sash & Door	(2540)	22	5.6	739	6.5	*	GRG
Plastics Fabricating	(1650)	9	2.3	90	0.8	*	GRG
Frozen Fruit & Vegetables	(1032)	8	2.0	96	0.8	0.3	GRG
Misc. Food Processors	(1089)	8	2.0	112	1.0	1.1	GRG
Metal Stamping & Coating	(3040)	8	2.0	104	0.9	*	GRG
Misc. Non-Metallic Min.	(3599)	8	2.0	128	1.1	*	GRG
Pulp & Paper Mills	(2710)	7	1.8	427	3.7	6.9	GRG
Iron & Steel Mills	(2910)	7	1.8	56	0.5	*	GRG
Carpet, Mat & Rug	(1860)	6	1.5	444	3.9	*	GRG
Structural Concrete Prod.	(3542)	6	1.5	72	0.6	*	GRG
Group: II							
Fruit & Veg. Cannery	(1031)	9	2.3	27	0.2	2.0	DRG
Communications Equip.	(3350)	7	1.8	1365	11.9	*	DRG
Misc. Paper Converters	(2740)	7	1.8	84	0.7	*	DRG
Food Industry	(1060)	6	1.5	48	0.4	0.6	DRG
Rubber Products	(1623)	3	0.8	1548	13.5	*	DRG
Group: III							
Fish Products	(1020)	47	12.0	1551	13.5	14.2	GRD
Sawmills	(2513)	23	5.9	368	3.2	5.1	GRD
Commercial Printing	(2860)	20	5.1	200	1.7	1.0	GRD
Household Furniture	(2619)	6	1.5	510	4.5	0.3	GRD
Group: IV							
Machine Shops	(3080)	11	2.8	154	1.3	0.7	DRD
Bakeries	(1072)	9	2.3	90	0.8	3.3	DRD
Dairy Products	(1040)	6	1.5	162	1.4	4.7	DRD
Shipbuilding & Repair	(3270)	1	0.3	52	0.5	6.8	DRD
Sub Total		254	64.8	8757	76.4		
The Grouped Ind. & Rest	(9998)	138	35.2	2699	23.6	53.0*	RG
Provincial Total		392	100.0	11456	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

DRG = Declining Nationally but Growing Regionally.

RG = Growing Regionally.

ince.

4.5.3 Patterns of Differential Employment Growth and the RDIA Grants

It was noted above that in Nova Scotia, the pattern of differential growth reversed from negative during the first period to positive during the second period. In order to describe the association between this pattern of growth and the RDIA programme, the distribution patterns of RDIA assisted establishments were examined below.

Table 8-B (Column IV) indicates that the category of grouped industries was mainly responsible for reversing the pattern of differential growth. It accounted for about 86.0 per cent of employment gain accruing from the differential growth. The largest contributors to this gain appear to be two non-resource-based industries - communications equipment and rubber products. These industries had differential growth advantages in the province. They were provided RDIA grants and expected to create a large number of jobs (see Table 8-C, Columns II and III). In addition to these, the RDIA programme provided a high number of grants to other industries which were classified under the category of grouped industries, had differential growth advantages in the province, and were national growth industries (see Table 8-C, Groups I and II, Columns II and III). Thus, by giving grants to industries having differential growth advantages in the province and/or the national growth industries, the RDIA programme appears to have stimulated differential em-

ployment growth in the category of grouped industries, which in turn improved the differential employment growth as well as the net employment growth of the province.

There were ninety-two industrial categories in Nova Scotia, which received RDIA grants. Of the ninety-two industries, fifty-five (59.8 per cent) were national growth industries and thirty-seven (40.2 per cent) were declining, the majority in both categories of industries had differential growth advantages in the province. Table 8-C illustrates this point. It provides a list of those industries which accounted for 64.8 per cent of RDIA grants and were expected to create 76.4 per cent of new jobs. Columns II and V (Group I) of this table indicate that the RDIA grants were given to a higher number of industries which were not only national growth industries, but also had differential growth advantages in the province. Furthermore, some grants were given to industries which, although declining nationally, had a differential growth advantage in the province (see Group II). By contrast, it is evident from Table 8-C (Group IV) that the RDIA grants were given to a fewer number of industries which were declining nationally and had differential growth disadvantages in the province. This pattern of distribution indicates that the RDIA programme did invest in industries which had the possibility of providing a more secure future for the province. In addition, the grants given to the province were sufficient in absolute terms to stimulate differential employment growth in the province.

The differential growth in employment of the recipient industries was regressed against the new jobs to determine the direction and degree of association between them. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = +0.88$) and the regression coefficient ($B = +0.50$) were positive and statistically significant at .001 and .01 levels of confidence respectively. The new jobs explained about 78.0 per cent of variations in the differential employment growth. These results indicate that an improvement in the differential employment growth of Nova Scotia may have resulted from the RDIA programme.

The standardized residuals were examined to investigate factors affecting the differential employment growth of Nova Scotia. In shipbuilding and repair, sawmills, and fish products industries, the standardized residuals were around -2. The employment losses in these industries were more than expected. In the case of shipbuilding and repair, this could be the result of market factors. It is reported by DREE (1979f) that from 1975 onwards there was an increase in the world shipping tonnage and fierce competition among the shipbuilders of world. These factors may have reduced the demand for shipping activities, left Nova Scotia without any new contracts, and thus caused employment losses in shipbuilding and repair. In the case of sawmills and fish products, the employment losses could be the result of sup-

ply constraints arising from budworm destruction, overworked forests, and over-fished stocks (DREE, 1979f). Furthermore, the increasing costs of energy, raw materials and transportation may have weakened Nova Scotia's competitive position in outside markets for these products and cause employment losses. Thus deterioration in comparative advantages or access either to inputs or markets appear to be the other factors affecting the differential employment growth of the province.

It appears from the above results that Nova Scotia is the second province in which the RDIA programme has achieved a greater success. This conclusion is based on the following facts: (i) the industrial grants went to national growth industries, most of which had differential growth advantages in the province, (ii) the RDIA grants given to Nova Scotia were sufficient in absolute terms, and (iii) a higher proportion of grants were new plants, and small and medium sized, the vast majority of them were in the national growth sectors. The shipbuilding and repair needs special attention. The inputs and market conditions of sawmills and fish products need to be improved. Finally, a lesson to be learned from the case study of Nova Scotia is that if the natural resources of a province are depleting, the growth performance of that province could be maintained or improved by attracting non-resource-based industries for which there are comparative advantages, as was the case for communications equipment and rubber products.

4.6 MANITOBA

Pre-existing Industrial Structure: Among the slow growing provinces, Manitoba is the second most industrialized province (next to Quebec). According to a DREE report (1979i), resource endowments, markets, and location have played an important role in its industrial development. The exploitation of natural resources, the export of staples, such as fur and wheat, and the backward, forward and final demand linkage effects of such staples led to the development of manufacturing and service sectors in the province. Its central location and connection with transportation networks of the most populous and industrialized parts of Canada led to the development of Winnipeg as the "entrepot", which attracted a number of manufacturing and processing plants as well as financial, commercial, and transportation activities. DREE further notes that abundant hydro-electric supply at attractive rates, increased access to forest and fish resources, and well developed infrastructure facilities and agglomeration economies (especially in Winnipeg) led to the development of pulp and paper mills, wood industries, fish products, and footlose industries. Thus the industrial structure of Manitoba was fairly diversified.

It is rather surprising to note that, in spite of a diversified industrial structure, Manitoba experienced employment losses during the first period, as was reflected in the shift and share results (Table 9-A, Columns II, III and

IV). It may be the result of the following factors. Manitoba's manufacturing activities were heavily dependent on agriculture and primary products which were highly sensitive to local, regional, national and international demands. The industrial structure of this province was made up of small sized firms, the majority of which were in the traditional, labour-intensive and low-technology industries. Finally, DREE (1979i) notes that because of tariff policy, the province was facing higher costs for externally purchased inputs, as the result of which its products may have become more expensive, less competitive and caused employment losses. However, the shift and share results (Table 9-B, Columns II, III and IV) indicate that during the second period there was a considerable drop in employment losses resulting from its industrial composition effect, and its differential growth effect reversed from negative to positive. Consequently, the province experienced a net total gain in manufacturing employment. It may be the result of the RDIA programme, the impact of which is examined below.

Table 9-A

Industrial Patterns of Employment Growth in Manitoba: 1961-69

I Manufacturing Industries		II Total Shift		III Industrial Mix		IV Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Agricultural Implement	(3110)	+1020	+29.2	-20	-0.8	+1040	+27.9
Fruit & Veg. Cannery	(1120)	+348	+10.0	-45	-1.8	+393	+10.6
Architectural Metal	(3030)	+282	+8.1	-4	-0.2	+286	+7.7
Industrial Chemicals	(3780)	+269	+7.7	-0	-0.0	+269	+7.2
Misc. Metal Fabricating	(3090)	+253	+7.2	+67	+4.0	+186	+5.0
Feed Manufacturers	(1230)	+252	+7.2	-28	-1.1	+280	+7.5
Fabricated Struct. Metal	(3020)	+169	+4.8	+31	+1.9	+138	+3.7
Signs & Displays	(3970)	+148	+4.2	+15	+0.9	+134	+3.6
Ready-Mix Concrete	(3480)	+119	+3.4	+95	+5.7	+23	+0.6
Motor Vehicle Parts	(3250)	+73	+2.1	+221	+13.2	-148	-2.8
Women's Clothing	(2241)	+73	+2.1	-230	-9.1	+303	+8.1
Heating Equipment	(3070)	+70	+2.0	-68	-2.7	+138	+3.7
Office & Store Machinery	(3180)	+66	+1.9	+122	+7.3	-56	-1.1
Machine Shops	(3080)	+39	+1.1	+252	+15.0	-213	-4.0
Sawmills	(2513)	+32	+0.9	-26	-1.0	+59	+1.6
The Grouped Industries	(9998)	-1752	-29.7	+54	+3.2	-1805	-34.3
Commercial Printing	(2860)	-631	-10.7	-116	-4.6	-515	-9.8
Bakeries	(1290)	-620	-10.5	-388	-15.3	-232	-4.4
Dairy Factories	(1050)	-608	-10.3	-483	-19.1	-124	-2.4
Fur Goods	(2460)	-374	-6.3	-212	-8.4	-162	-3.1
Breweries	(1450)	-352	-6.0	-219	-8.7	-132	-2.5
Poultry Processors	(1030)	-351	-6.0	+57	+3.4	-407	-7.7
Paint & Varnish	(3750)	-201	-3.4	-59	-2.3	-142	-2.7
Metal Stamping & Coating	(3040)	-170	-2.9	+23	+12.7	-383	-7.3
Concrete Products	(3470)	-152	-2.6	-30	-1.2	-123	-2.3
Sash & Door	(2541)	-151	-2.6	-7	-0.3	-144	-2.7
Plastic Fabricators	(3850)	-108	-1.8	+245	+14.6	-353	-6.7
Printing & Publishing	(2890)	-94	-1.6	-336	-13.3	+242	+6.5
Stone Products	(3530)	-73	-1.2	-41	-1.6	-32	-0.6
Children's Clothing	(2450)	-41	-0.7	-116	-4.6	+75	+2.0
Publishing Only	(2880)	-14	-0.2	+7	+0.4	-21	-0.4
Total Gains*		+3497	+91.9	+1676	+82.3	+3723	+95.7
Total Losses*		-5901	-96.5	-2533	-96.1	-5269	-94.8
Net		-2404		-857		-1546	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 9-8

Industrial Patterns of Employment Growth in Manitoba: 1970-78

I Manufacturing Industries.		II		III		IV	
Names	SIC Codes	Total Shift Absolute Values	% of Total	Industrial Mix Absolute Values	% of Total	Differential Growth Absolute Values	% of Total
Agricultural Implement	(3110)	+1057	+29.0	+554	+22.0	+502	+14.1
Sash & Door	(2540)	+651	+17.9	+386	+15.3	+265	+7.4
Metal Stamping & Coating	(3040)	+426	+11.7	+38	+1.5	+388	+10.9
Poultry Processors	(1012)	+290	+8.0	+60	+2.4	+231	+6.5
Ready-Mix Concrete	(3550)	+187	+5.1	+51	+2.0	+136	+3.8
Meat Processors	(1011)	+170	+4.5	+75	+3.0	+96	+2.7
Metal Door & Window	(3031)	+147	+4.0	+75	+3.0	+72	+2.0
Sawmills	(2513)	+145	+4.0	+61	+2.4	+84	+2.4
Communications Equip.	(3350)	+107	+2.9	-54	-2.1	+161	+4.5
Stone Products	(3530)	+107	+2.9	+7	+0.3	+100	+2.8
Publishing & Printing	(2890)	+40	+1.1	-98	-3.8	+138	+3.9
The Grouped Industries	(9998)	+37	+1.0	-320	-12.3	+356	+10.0
Publishing Only	(2880)	+12	+0.3	+118	+4.7	-106	-3.1
Dairy Products	(1040)	-460	-12.9	-313	-12.0	-147	-4.3
Women's Clothing	(2441)	-421	-11.8	-259	-10.0	-162	-4.8
Misc. Food Processors	(1089)	-388	-10.9	+130	+5.2	-518	-15.2
Breweries	(1093)	-318	-8.9	+128	+5.1	-446	-13.1
Misc. Metal Fabricating	(3090)	-300	-8.4	+98	+3.9	-398	-11.7
Bakeries	(1072)	-284	-8.0	-239	-9.2	-45	-1.3
Architectural Metal	(3039)	-197	-5.5	+41	+1.6	-238	-7.0
Commercial Printing	(2860)	-187	-5.2	+138	+5.5	-326	-9.6
Heating Equip.	(3070)	-163	-4.6	-2	-0.1	-161	-4.7
Household Furniture	(2619)	-148	-4.2	+126	+5.0	-274	-8.1
Signs & Displays	(3970)	-97	-2.7	+11	+0.4	-108	-3.2
Fabricated Struct. Metal	(3020)	-86	-2.4	-227	-8.7	+141	+4.0
Aircraft & Parts	(3210)	-75	-2.1	-450	-17.3	+374	+10.5
Feed Industry	(1060)	-57	-1.6	-52	-2.0	-5	-0.2
Machine Shops	(3080)	-38	-1.1	-143	-5.5	+105	+3.0
Paint & Varnish	(3750)	-33	-0.9	-59	-2.3	+26	+0.7
Misc. Furniture	(2660)	-33	-0.9	-138	-5.3	+105	+3.0
Fur Goods	(2460)	-3	-0.1	-20	-0.8	+17	+0.5
Motor Vehicle Parts	(3250)	-3	-0.1	+140	+5.6	-143	-4.2
Total Gains*		+3644	+92.4	+2517	+88.9	+3562	+92.7
Total Losses*		-3571	-92.3	-2604	-91.4	-3402	-90.5
Net		+73		-87		+160	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

4.6.1 Regional Patterns of Manufacturing Employment
Growth: 1961-69 and 1970-78

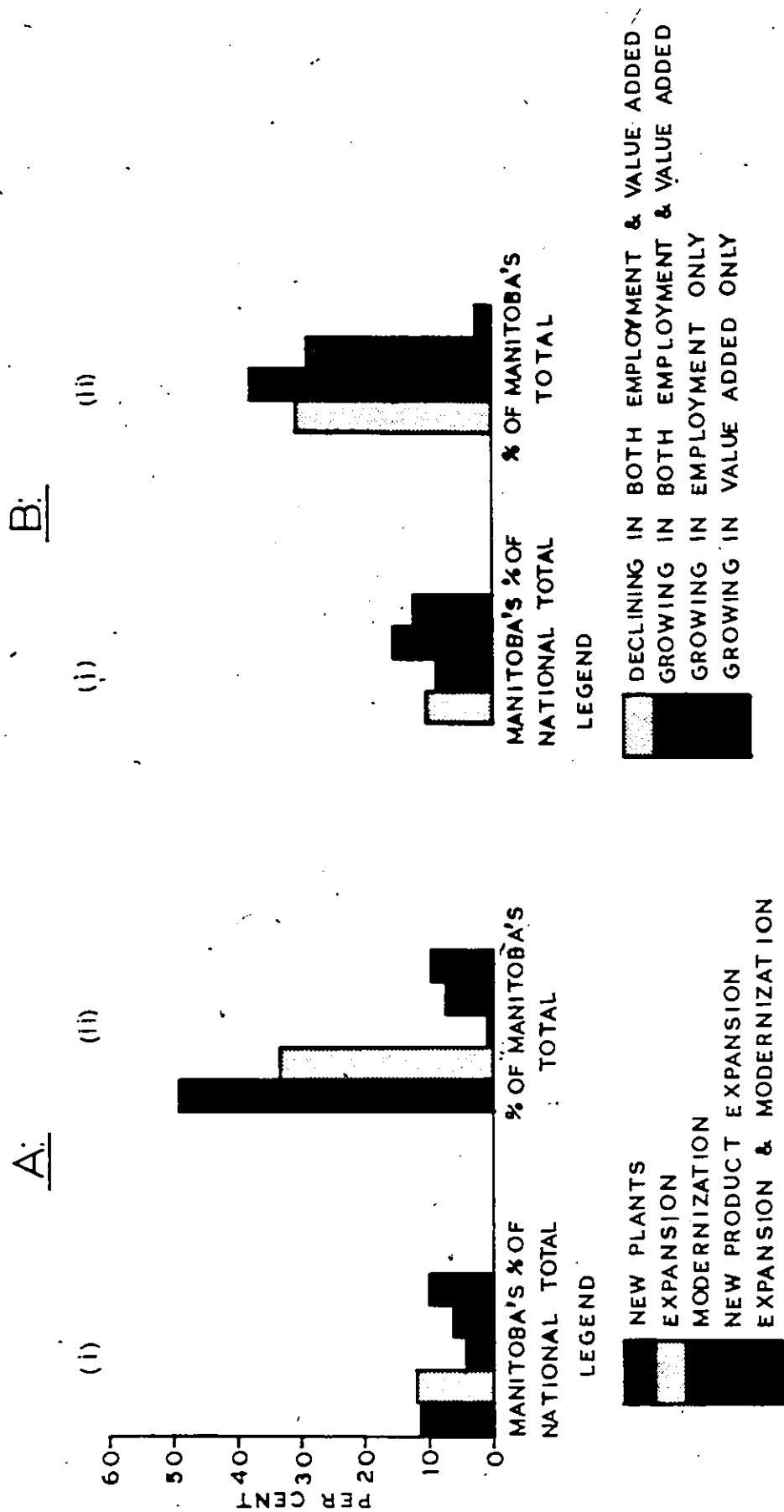
The shift and share results for Manitoba are presented in Tables 9-A and 9-B. Column II of Table 9-A shows that Manitoba experienced a net total loss of 2,404 manufacturing jobs during the 1961-69 period. Of the 2,404 jobs, 857 (35.7 per cent) jobs were lost due to its adverse industrial composition (Table 9-A, Column III), and 1,546 (64.3 per cent) jobs were lost as the result of its differential growth disadvantages (Table 9-A, Column IV). By contrast, Manitoba was noted to have improved its position during the 1970-78 period. The province experienced a net total gain of 73 manufacturing jobs (Table 9-B, Column II). This gain was mainly because of the differential growth, the positive impact of which offset the employment losses resulting from its adverse industrial mix (see Table 9-B, Columns III and IV). When the results of the second period were compared with those of the first period, the following growth patterns were noted. During the second period: (i) there was a definite improvement in the net employment growth which reversed from negative to positive, (ii) although the industrial mix effect remained negative, there was a considerable drop in employment losses resulting from its industrial composition, and (iii) there was an improvement in the differential employment growth which reversed from negative to po-

sitive. Although these patterns of growth may have resulted from Manitoba's pre-existing industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

4.6.2. Patterns of Structural Changes and the RDIA Grants

Figure 6 reveals that among the slow growing provinces, Manitoba was the second largest (next to Quebec) recipient of RDIA grants. It accounted for 10.7 per cent of net accepted offers, 8.5 per cent of estimated capital cost, 9.0 per cent of incentive grants, and 8.6 per cent of expected new jobs. In comparison to its industrial base and population, these grants were considerable. For example, the new jobs created by these grants accounted for about 26.0 per cent of total manufacturing employment in the province, a rate which was higher than in Quebec. Furthermore, Manitoba received 56 grants per 100,000 population and ranked the third highest recipient among the slow growing provinces. Thus the RDIA grants, which were given to Manitoba, were sufficient in absolute terms to bring about changes in the industrial structure and to stimulate differential employment growth of the province. In order to determine the impact of RDIA assisted establishments on the structural changes and the differential employment growth of the province, the distribution patterns of these establishments by various types were examined.

FIGURE 12-A,B: DISTRIBUTION OF RDIA GRANTS IN MANITOBA
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78



Sector Level Analysis: In order to adjust the industrial structure of the province to the changing patterns of demand, there was a need to attract new establishments and new product expansion. An examination of Figure 12-A (ii) indicates that about 56.0 per cent of the RDIA assisted establishments, which were located in Manitoba, were new plants and new product expansion, a high proportion (about 68.0 and 65.0 per cent respectively) of which were in the national growth sectors (see Appendix D). Since the new plants and new product expansion were more job creators, the RDIA programme may be credited for the drop in employment losses accruing from the industrial mix effect. However, the province could not reverse its industrial mix effect from negative to positive because a considerable proportion of new plants and new product expansion were in the national declining sectors (see Appendix D).

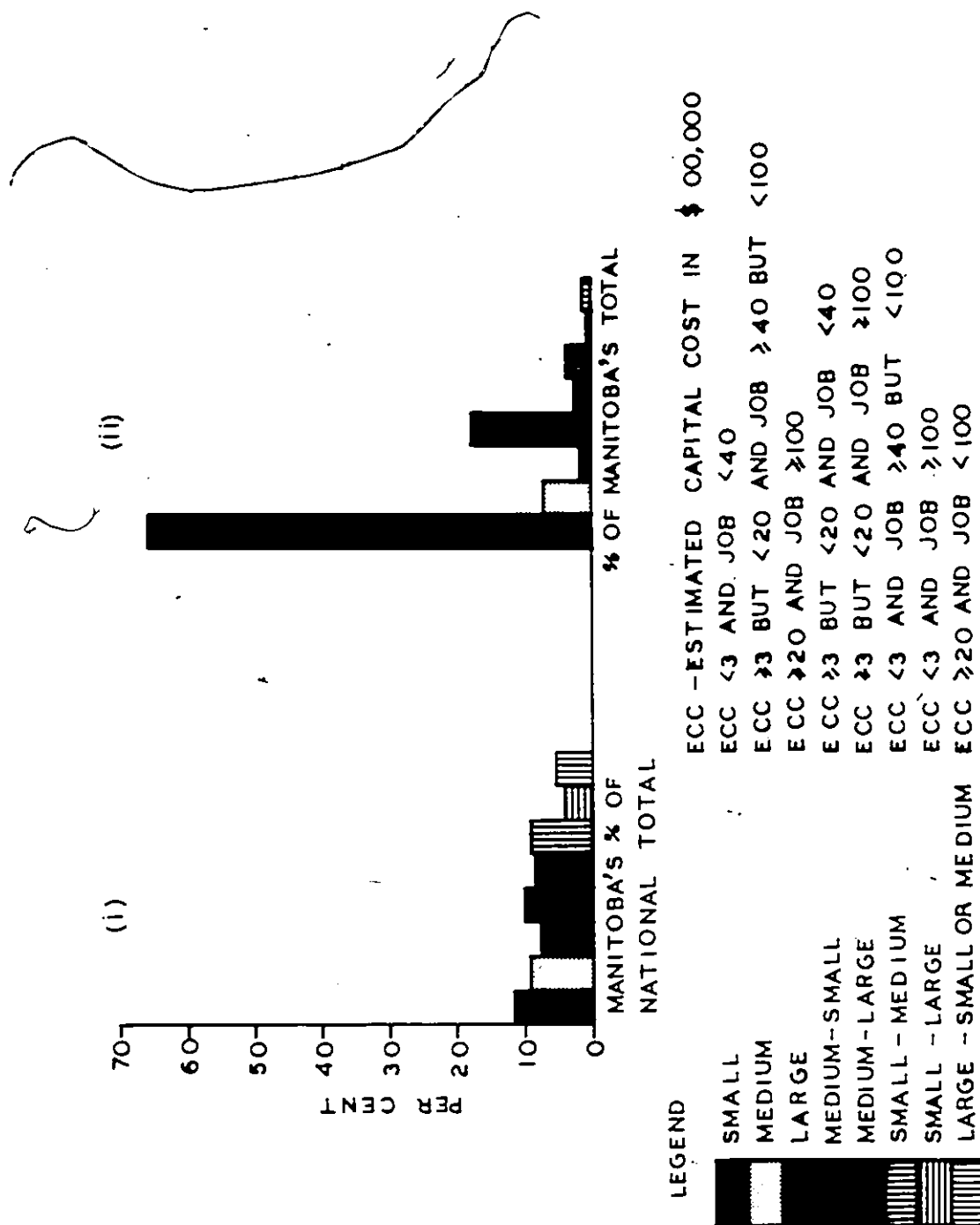
One of the objectives of RDIA programme is to attract manufacturing establishments and thus to change favourably the industrial structure of slow growing provinces. This could be achieved by injecting national growth industries in a province. An examination of Figure 12-B (ii) reveals that the RDIA programme gave 37.7 per cent of grants to industries which were growing nationally in employment as well as in value added, and 31.2 per cent of grants to industries which were growing nationally in either employment or value added. This may be another reason why Manitoba experienced

a drop in employment losses accruing from the industrial mix effect. However, the province was unable to reverse its industrial mix because a considerable proportion (31.0 per cent) of RDIA grants were given to national declining industries.

It is evident from Figure 12-C (ii) that in Manitoba a very high proportion (94.5 per cent) of grants were given to small and medium sized establishments. It was noted that about 59.0 per cent of these establishments were in the category of national growth industries (see Appendix E). It may be for this reason too that Manitoba experienced a drop in employment losses accruing from the industrial mix effect. However, a complete reversal of industrial mix effect did not take place in the province because a considerable proportion of small and medium sized establishments were in the national declining sectors (see Appendix E).

In Manitoba the proportionality modification shift was noted to be negative during the first period as well as for the second period (see Tables 2-A and 2-B, Column VI). This pattern of growth indicates that even during the second period Manitoba did increase its total of industries which were declining nationally, and as a result it lost 164 manufacturing jobs. However, a negative proportionality modification shift accompanied by a positive differential growth indicates that Manitoba, similar to Nova Scotia, did well during the second period even by specializing in nationally declining industries for which it had comparative advantage.

FIGURE 12-C: DISTRIBUTION OF RDIA GRANTS IN MANITOBA
BY SIZE OF ESTABLISHMENT: 1970-78



es. To some extent, this credit goes to the RDIA programme which provided grants to a few industries which were declining nationally, but had comparative advantages in the province and created a higher number of jobs (see Table 9-C, Group II, Columns II and III).

Disaggregated Level Analysis: The shift and share results at a disaggregated level of manufacturing industry are presented in Tables 9-A and 9-B. It is to be noted that these tables do not provide a complete list of all industries in the province, but list only those industries which experienced large employment gains or losses and had significant influence on the provincial growth performance. Table 9-B (Columns I and II) show that dairy products, women's clothing, miscellaneous food processors, breweries, miscellaneous metal fabricating, bakeries, ornamental metal, and household furniture were the largest net employment losers in the province. These ten industries accounted for about 80.0 per cent of total employment losses in the province. However, the net employment losses in these industries along with others were not large enough to offset the net employment gains in agricultural implement, sash, door and other millworks; metal stamping and coating, poultry processors, ready-mix concrete, meat processors, metal door and window, sawmills, communications equipment, stone products, and a few other industries (see Table 9-B Columns I and II). Consequently, the pattern of employment growth in Manitoba re-

versed from a net total loss to a net total gain during the second period.

Tables 9-A and 9-B (Column II) show that agricultural implement, sawmills, and ready-mix concrete experienced a net employment gain in both periods. In these industries there was some increase in net employment gain during the second period. It is to be noted that these industries were national growth industries, had differential growth advantages in the province, and were given RDIA grants (see Table 9-C, columns II and V).

An examination of Tables 9-A and 9-B (Column II) reveals that in the case of sash, door and other millworks, metal stamping and coating, poultry processors, stone products, publishing and printing, publishing only, and the grouped industries, the pattern of employment growth reversed from a net total loss during the first period to a net total gain during the second period. Although this could be the result of change in their demand and supply conditions, to some extent, it may also have resulted from the effects of the RDIA programme. For example, except for publishing and printing, and publishing only, all these industries received RDIA grants, were national growth industries, and had differential growth advantages in the province (Table 9-C, Group I, Columns II and V). Thus, by providing grants to the most suitable industries, the RDIA programme appears to have improved the employment growth performance of the province.

Although commercial printing, breweries, and fur goods were experiencing net employment losses during both periods, there was a considerable drop in employment losses during the second period (see Tables 9-A and 9-B, Column II). This could be the result of the RDIA programme. By providing grants to these national growth industries, especially the commercial printing, the RDIA programme appears to have reversed their industrial mix effect from negative to positive and thus caused a drop in net employment losses during the second period (see Table 9-B, Column III; Table 9-C, Group III, Column II). In the case of fur goods, the drop in employment losses appears to be the result of some improvement in its differential growth advantage.

Except for these progressive attempts, in the case of bakeries, and dairy products, the RDIA programme appears to have adopted a defensive policy. Tables 9-A and 9-B (Column II) show that these industries were experiencing net employment losses not only during the first period, but also during the second period. These two industries were declining nationally and had differential growth disadvantages in the province. In spite of being unsuitable, these industries received RDIA grants.

In the case of women's clothing, miscellaneous metal fabricating, ornamental metal, heating equipment, signs and displays, fabricated structural metal, feed industry, household furniture, machine shops, and motor vehicle parts, the pattern of net employment growth reversed from positive dur-

ing the first period to negative during the second period (see Table 9-A and 9-B, Column II). To some extent, this could be the result of the the RDIA programme that gave some grants to these industries which were either declining nationally or had differential growth disadvantages in the province (Table 9-C, Groups II, III, and IV, Columns II and V). In the former seven industries, the reversed pattern of growth may have resulted from deterioration in their differential growth advantages in the province (see Tables 9-A and 9-B, Column IV). It is evident from the above two sets of example that the RDIA programme attracted some industries to the province, which were declining nationally. This may be one of the reasons why Manitoba could not reverse its industrial mix effect from negative to positive and also experienced some employment losses accruing from its proportionality modification shift.

4.6.3 Patterns of Differential Employment Growth and the RDIA Grants

It was noted above that in Manitoba the patterns of differential employment growth reversed from negative during the first period to positive during the second period. In order to describe the association between this pattern of growth and the RDIA programme, the distribution patterns of RDIA assisted establishments were examined.

There were 102 industrial categories in Manitoba, which received RDIA grants. Of the 102 industries, sixty-

Table 9-C

Distribution of RDIA Grants among Various Industries of Manitoba: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in 1970	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Sash & Door	(2540)	31	5.7	672	4.9	1.4	GRG
Misc. Machinery & Equip.	(3150)	27	4.9	756	5.6	*	GRG
Metal Stamping & Coating	(3040)	23	4.2	262	1.9	1.9	GRG
Meat Processors	(1011)	18	3.3	234	1.7	6.0	GRG
Plastics Fabricating	(1650)	15	2.7	240	1.8	*	GRG
Synthetic Resins	(3730)	15	2.7	300	2.2	*	GRG
Agricultural Implement	(3110)	12	2.2	720	5.3	2.8	GRG
Non-Commercial Trailer	(3242)	10	1.8	410	3.0	*	GRG
Iron and Steel Mills	(2910)	9	1.6	99	0.7	*	GRG
Embroidery & Pleating	(1893)	8	1.5	120	0.9	*	GRG
Sawmills	(2513)	8	1.5	488	3.6	0.5	GRG
Boatbuilding & Repair	(3280)	8	1.5	224	1.6	0.3	GRG
Vegetable Oil Mills	(1083)	7	1.3	70	0.5	*	GRG
Poultry Processors	(1012)	6	1.1	108	0.8	0.7	GRG
Commercial Trailer	(3243)	5	0.9	255	1.9	*	GRG
Aircraft & Parts	(3210)	4	0.7	456	3.3	4.6	GRG
Ready-mix Concrete	(3550)	4	0.7	16	0.1	0.5	GRG
Stone Products	(3530)	3	0.5	30	0.2	0.0	GRG
Motor Vehicle Manuf.	(3230)	2	0.4	482	3.5	*	GRG
Group: II							
Men's Clothing	(2431)	18	3.3	1224	9.0	*	DRG
Cereal	(1050)	17	3.1	68	0.5	*	DRG
Machine Shops	(3080)	12	2.2	204	1.5	1.2	DRG
Communications Equip.	(3350)	10	1.8	400	2.9	0.4	DRG
Fabricated Struct. Metal	(3020)	9	1.6	189	1.4	2.2	DRG
Group: III							
Commercial Printing	(2860)	52	9.5	520	3.8	3.5	GRD
Household Furniture	(2619)	18	3.3	414	3.0	2.3	GRD
Misc. Food Processors	(1089)	7	1.3	84	0.6	2.2	GRD
Misc. Metal Fabricating	(3090)	7	1.3	77	0.6	1.7	GRD
Group: IV							
Feed Industry	(1060)	12	2.2	108	0.8	0.9	DRD
Bakeries	(1072)	10	1.8	90	0.7	2.3	DRD
Platemaking & Typesetting	(2870)	9	1.6	90	0.7	0.4	DRD
Women's Clothing	(2441)	8	1.5	928	6.8	4.5	DRD
Sub Total		404	73.6	10338	75.9		
The Grouped Ind. & Rest	(9998)	145	26.4	3281	24.1	59.7*	RG
Provincial Total		549	100.0	13619	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

DRG = Declining Nationally but Growing Regionally.

RG = Growing Regionally.

three (61.8 per cent) were national growth industries and thirty-nine (38.2 per cent) were declining, the majority in both categories of industries had differential growth advantages in the province. Table 9-C illustrates this point. It provides a list of those industries which accounted for 73.6 per cent of RDIA grants and were expected to create 75.9 per cent of new jobs. Columns II and V (Group I) of this table indicate that the RDIA grants were given to a higher number of industries which were not only national growth industries, but also had differential growth advantages in the province. Furthermore, some grants were given to industries which were declining nationally, but had differential growth advantages in the province (see Group II). By contrast, Table 9-C (Group IV) indicates that the RDIA grants were given to a fewer number of industries which were declining nationally and had differential growth disadvantages in the province. This pattern of distribution indicates that the RDIA programme did allocate its some resources to industries which had the possibility of providing a more secure future for the province. In addition the grants given to the province were sufficient in absolute terms to stimulate differential employment growth in the province.

The differential growth in employment of the recipient industries was regressed against the new jobs to determine the direction and degree of association between them. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = +0.30$) and re-

gression coefficient ($B = 0.06$) were positive. However, only the coefficient of correlation was statistically significant at .05 level of confidence. Furthermore, the new jobs explained only 9.0 per cent of variations in the differential employment growth.

Since a very high percentage of variation remains unexplained, the differential employment growth in Manitoba must be affected by some factors other than the RDIA programme. In order to investigate these factors, the standardized residuals were examined. In the case of agricultural implement, aircraft and parts, metal stamping and coating, and poultry processors, the standardized residuals were greater than +1. In these industries the employment grew more rapidly than expected. It may have resulted from the differential growth advantages that these industries had in the province. In addition to this, the tax reduction by provincial government, General Agreement on Tariffs and Trade (GATT), the federal government's expenditures on communications, defence, security and infrastructure facilities, and the proximity to rapidly growing economy of the Prairie region and the mid-western United States may have improved their access either to inputs or markets and thus have stimulated employment growth. These industries may also have benefited from other federal-provincial programmes and policies.

On the other side of the ledger, in the case of miscellaneous food processors, breweries, household furniture, commercial printing, ornamental metal, and miscellaneous metal fabricating industries, the standardized residuals were greater than -1. In these industries, employment grew slower than expected. This may be due to some comparative disadvantages. For example, because of inadequate water supply and sewage facilities, the food and beverage industries are located far away from crop and livestock producing areas (DREE 1979i), and thus incur a higher cost of production. Furthermore, an increase in oil price and cost of transportation, a decrease in demand for these products, and market competition from the national and international producers may have had adverse effects on their employment growth.

It appears from the above results that by injecting national growth industries into the Manitoba, the RDIA programme was successful in reducing employment losses accruing from industrial mix effect. The programme also appears to have achieved some success in stimulating the differential employment growth in the province. However, the major factors affecting differential employment growth in the province appear to be the comparative advantages and increased accessibility either to inputs or markets arising from federal expenditures on communications, defence, security and infrastructure facilities, General Agreement on Tariffs and Trade, tax reductions, and an increasing demand from the

rapidly growing economies of Alberta, Saskatchewan and the mid-western United States.

4.7 SASKATCHEWAN

Pre-existing Industrial Structure: Among the slow growing provinces, Saskatchewan is moderately industrialized (see Table 1). The province is rich in natural resources. Its industrial development began with exploitation of agriculture. The high quality of land puts this province at a comparative advantage for agricultural products. An increasing extra-provincial and world demand for these products led to the development of food and beverage industries, agricultural implement and related industries. Similarly, the exploitation of forest resources led to the development of sawmills, and other wood industries. Thus the industrial development in the province is highly dependent on resource sectors, and markets located outside the province.

DREE reports that the small size of domestic market, land-locked location, poor access to distant markets, and scarcity of entrepreneurship and industrial infrastructure are inhibiting the development of new activities and manufacturing industries (DREE, 1979j). Since most of the primary products are exported in raw and unprocessed form, the province is devoid of benefits arising from value added. DREE also notes that the province suffers from the leakage effect that results from the use of imported machinery and

Table 10-A

Industrial Patterns of Employment Growth in Saskatchewan: 1961-69

I		II		III		IV	
Manufacturing Industries		Total Shift		Industrial Mix		Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
Agricultural Implement	(3110)	+312	+26.8	-4	-0.3	+316	+30.8
Ready-Mix Concrete	(3480)	+173	+14.9	+44	+11.3	+129	+12.6
Machine Shops	(3080)	+163	+14.0	+60	+15.4	+103	+10.0
Fabricated Struct. Metal	(3020)	+147	+12.6	+9	+2.3	+138	+13.5
Commercial Printing	(2860)	+91	+7.8	-17	-1.1	+107	+10.4
Office & Store Machinery	(3180)	+72	+6.2	+52	+13.3	+20	+2.0
Concrete Products	(3470)	+64	+5.5	-10	-0.6	+73	+7.1
Feed Manufacturers	(1230)	+27	+2.3	-9	-0.6	+36	+3.5
Dairy Factories	(1050)	-546	-20.3	-487	-30.8	-59	-4.3
The Grouped Industries	(9998)	-498	-18.5	+59	+15.1	-557	-41.0
Petroleum Refining	(3651)	-422	-15.7	-368	-23.3	-54	-4.0
Bakeries	(1290)	-287	-10.7	-250	-15.8	-36	-2.7
Printing & Publishing	(2890)	-217	-8.1	-207	-13.1	-10	-0.7
Sawmills	(2513)	-159	-5.9	-80	-5.1	-79	-5.8
Soft Drink	(1410)	-157	-5.9	-44	-2.8	-113	-8.3
Poultry Processors	(1030)	-157	-5.9	+40	+10.2	-197	-14.5
Breweries	(1450)	-96	-3.6	-98	-6.2	+2	+0.2
Metal Stamping & Coating	(3040)	-64	-2.4	+56	+14.3	-119	-8.8
Misc. Machinery & Equip.	(3150)	-29	-1.1	+46	+11.8	-76	-5.6
Total Gains*		+1164	+90.1	+391	+93.7	+1026	+90.1
Total Losses*		-2686	-98.1	-1579	-99.7	-1360	-95.7
Net		-1522		-1188		-334	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

Table 10-B

Industrial Patterns of Employment Growth in Saskatchewan: 1970-78

I		II		III		IV	
Manufacturing Industries		Total Shift		Industrial Mix		Differential Growth	
Names	SIC Codes	Absolute Values	% of Total	Absolute Values	% of Total	Absolute Values	% of Total
The Grouped Industries	(9998)	+2039	+52.7	-62	-14.2	+2100	+56.2
Agricultural Implement	(3110)	+939	+24.3	+152	+28.5	+787	+21.1
Ready-mix Concrete	(3550)	+215	+5.6	+44	+8.2	+171	+4.6
Publishing & Printing	(2890)	+135	+3.5	-53	-12.1	+188	+5.0
Feed Industry	(1060)	+123	+3.2	-16	-3.7	+138	+3.7
Soft Drink	(1091)	+104	+2.7	-35	-8.0	+139	+3.7
Sawmills	(2513)	+94	+2.4	+116	+21.7	-21	-3.0
Commercial Printing	(2860)	+84	+2.2	+32	+6.0	+52	+1.4
Fabricated Struct. Metal	(3020)	+44	+1.1	-85	-19.5	+129	+3.5
Meat Processors	(1011)	-426	-57.5	+40	+7.5	-466	-66.1
Bakeries	(1072)	-287	-38.7	-184	-42.1	-103	-14.6
Breweries	(1093)	-5	-0.7	+66	+12.4	-72	-10.2
Total Gains*		+3871	+97.7	+534	+84.3	+3738	+99.2
Total Losses*		-741	-96.9	-437	-99.6	-705	-93.9
Net		+3130		+97		+3033	

Note: * In case of absolute values the total gains or losses are total of all manufacturing industries in the province, but in case of % of total they are total of only those manufacturing industries which are listed in the table.

equipment in the resource sector. Furthermore, because of water shortage, drought conditions, and Saskatchewan's high dependence on resource sectors, and extra-provincial and foreign markets, the employment in this province is subject to cyclical fluctuations. It may be for these reasons that Saskatchewan has experienced employment losses during the first period, as was reflected in the shift and share results (Table 10-A, Columns II, III and IV). However, Table 10-B (Columns II, III and IV) indicates that the province improved its position during the second period and has experienced employment gains. This could be the result of resource boom. The province is very rich in a few mineral resources, such as oil and gas, potash, and uranium. The rising energy prices, and increasing extra-provincial and world demands for these products have led to the development of a number of manufacturing and processing industries in the province. However, our intent is to determine whether the RDIA programme had an impact on this growth.

4.7.1 Regional Patterns of Manufacturing Employment Growth: 1961-69 and 1970-78

The shift and share results for Saskatchewan are presented in Tables 10-A and 10-B. Column II of Table 10-A indicates that Saskatchewan experienced a net total loss of 1,522 manufacturing jobs during the 1961-69 period. Of the 1,522 jobs, 1,188 (78.1 per cent) jobs were lost due to its adverse industrial composition (Table 10-A, Column III), and

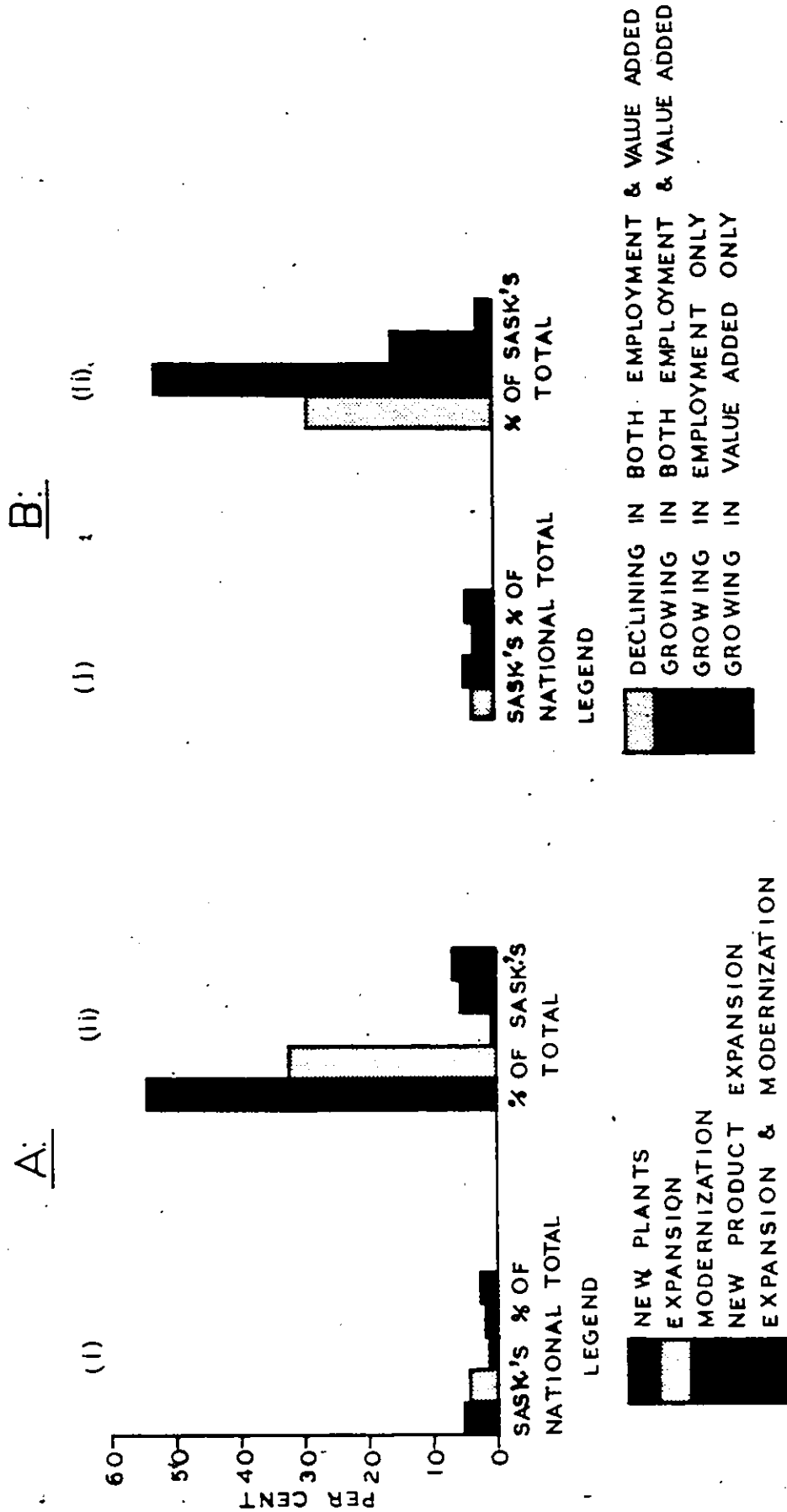
334 (21.9 per cent) jobs were lost as the result of its differential growth disadvantages (Table 10-A, Column IV). As opposed to the 1961-69 period, Saskatchewan improved its position during the 1970-78 period and experienced a net total gain of 3,130 manufacturing jobs (Table 10-B, Column II). Of the 3,130 jobs, only 97 (3.1 per cent) jobs were accounted for by its improved industrial composition (Table 10-B, Column III), and the remaining 3,033 (96.9 per cent) jobs were accounted for by its improved differential growth (Table 10-B, Column IV). When the results of the second period, were compared with those of the first period, the following growth patterns were noticed. During the second period: (i) the pattern of employment growth reversed from a net total loss to a net total gain, and (ii) there was an improvement in the industrial composition as well as in the differential employment growth of the province, the negative impact of which reversed to positive. Although these patterns of growth may have resulted from Saskatchewan's pre-existing industrial structure, they may also have resulted from the effects of the RDIA programme. In order to explain these patterns of growth, the distribution of RDIA assisted establishments was examined.

4.7.2 Patterns of Structural Changes and the RDIA Grants

Figure 6 indicates that among the slow growing provinces, Saskatchewan was the fifth largest recipient of RDIA grants. The province accounted for 4.2 per cent of net accepted offers, 4.2 per cent of estimated capital cost, 4.3 per cent of incentive grants, and 3.8 per cent of expected new jobs. In comparison to its industrial base, these grants were considerable. For example, the new jobs created by the RDIA grants accounted for about 31.0 per cent of total manufacturing employment in the province, a rate which was higher than in Newfoundland, Manitoba, and Quebec (see Appendix A). Thus the RDIA grants, which were given to Saskatchewan, were sufficient in absolute terms in bringing about changes in the industrial structure and stimulating the differential employment growth in the province. In order to determine the impact of RDIA assisted establishments on the structural changes and the differential employment growth in the province, the distribution patterns of these establishments by various types were examined.

Sector Level Analysis: To adjust the industrial structure of the province to the changing patterns of demand, there was a need to attract new establishments and new product expansion. An examination of Figure 13-A (ii) indicates that about 60.0 per cent of RDIA assisted establishments, which were located in Saskatchewan, were new plants and new product expansion, a high proportion (about 67.0 and

FIGURE 13-A,B: DISTRIBUTION OF RDIA GRANTS IN SASKATCHEWAN
BY PROJECT TYPE AND INDUSTRY TYPE: 1970-78

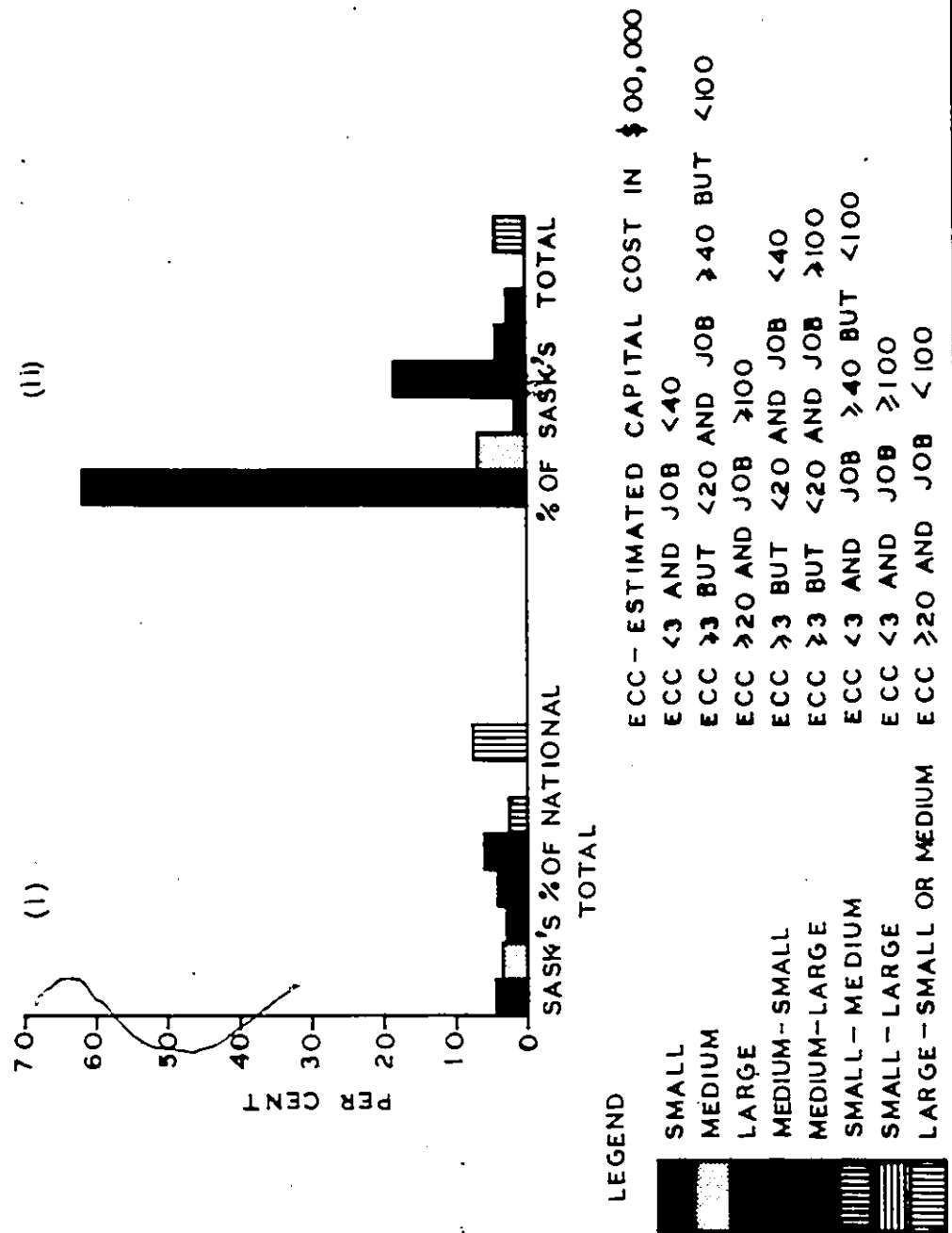


58.0 per cent respectively) of which were in the national growth sectors (see Appendix D). This may be one of the reasons why Saskatchewan's industrial mix effect reversed from negative during the first period to positive during the second period.

One of the objectives of RDIA programme is to attract manufacturing establishments and thus to change favourably the industrial structure of slow growing provinces. This could be achieved by injecting national growth industries in a province. A look at Figure 13-B (ii) reveals that the RDIA programme gave 52.5 per cent of grants to industries which were growing nationally in employment as well as in value added, and 18.0 per cent of grants to industries which were growing nationally in either employment or value added. This may be another reason why Saskatchewan's industrial mix effect reversed from negative to positive during the second period.

Figure 13-C (ii) shows that in Saskatchewan a very high proportion (89.9 per cent) of grants were provided to small and medium sized establishments. It was noted that about 67.0 per cent of these establishments were in the category of national growth industries (see Appendix E). This indicates that the programme has supported a trend toward small and medium sized establishments, the vast majority of which were in the national growth sectors.

FIGURE 13-C: DISTRIBUTION OF RDIA GRANTS IN SASKATCHEWAN
BY SIZE OF ESTABLISHMENT: 1970-78



Saskatchewan experienced a positive proportionality modification shift during the 1961-69 period as well as for the 1970-78 period (see Tables 2-A and 2-B, Column VI). This indicates that the province was gaining employment by attracting national growth industries during both periods. However, there was a slight drop in employment gain during the second period. This could be the result of a few declining industries which were attracted to the province by the RDIA programme (see Figure 13-B (ii)). It is interesting to note that this decrease in employment gain was associated with a tremendous increase in employment gain accruing from differential growth (see Tables 2-A and 2-B, Columns VI and VII). This pattern of growth is indicative of the fact that Saskatchewan did well even by specializing in nationally declining industries. To some extent, this credit goes to the RDIA programme which gave grants to a few industries which were declining nationally, but had differential growth advantages in the province and created a high number of jobs (see Table 10-C, Group II, Columns II and III).

Disaggregated Level Analysis: The shift and share results at a more disaggregated level are presented in Tables 10-A and 10-B. These Tables do not provide a complete list of all industries located in the province, but list only those industries which experienced large employment gains or losses and had significant influence on the provincial growth performance. Table 10-B (Columns I and II)

shows that meat processors, and bakeries were the largest net employment losers in the province. These two industries accounted for about 96.0 per cent of total employment losses in the province. However, the net employment losses in these industries were not large enough to offset the net employment gains in the grouped industries, agricultural implement, ready-mix concrete, publishing and printing, feed industry, soft drink, sawmills, commercial printing, and fabricated structural metal. Consequently, the pattern of employment growth reversed from a net total loss to a net total gain during the second period.

Tables 10-A and 10-B (Column II) indicate that agricultural implement, ready-mix concrete, commercial printing, feed industry, and fabricated structural metal are the industries which were experiencing net employment gains during both periods. The former three industries were national growth industries and had differential growth advantages in the province. The latter two industries, although they were declining nationally, had differential growth advantages in the province. It is to be noted that all these industries were provided RDIA grants (see Tables 10-C, Columns II, III and V). Thus RDIA programme appears to have allocated its resources to the most suitable industries in the province.

It is evident from Tables 10-A and 10-B (Column II) that in the case of the grouped industries, publishing and printing, soft drink, and sawmills, the pattern of employment growth reversed from a net total loss during the first

period to a net total gain during the second period. The employment growth in the grouped industries was spectacular, from a net total loss of 498 jobs to a net total gain of 2,039 jobs (Tables 10-A and 10-B, Column II). It may be due to the fact that the majority of grouped industries were national growth industries and had differential growth advantages in the province (see Table 10-C, Group I, Columns IV and V). Furthermore, a few industries, classified under the category of the grouped industries, although declining nationally, had differential growth advantages in the province (see Table 10-C, Group II, Columns IV and V). The other industries, similar to the grouped industries, were either national growth industries or had strong differential growth advantages in the province. By providing grants to the grouped industries as well as to the other industries, the RDIA programme appears to have improved their employment growth performance and supported a trend toward more suitable industries.

Except for these industries, bakeries, breweries, and meat processors were the industries which were experiencing net employment losses in the province (Table 10-B, Column II). It was only in the case of bakeries, the RDIA programme appears to have adopted a defensive policy. It provided grants to bakeries in spite of the fact that this industry was a national declining industry, had differential growth disadvantages in the province, and experienced net employ-

ment losses during both periods. However, in the case of breweries, and meat processors, the RDIA programme appears to have adopted a progressive policy. By providing grants to these national growth industries, the programme improved their industrial mix effect and thus reduced net employment losses (Table 10-C, Group III, Columns II, III and V; Table 10-B, Columns II and III). In breweries, the employment gain accruing from improved industrial mix was able to compensate most of the employment losses resulting from differential growth disadvantage, leaving a small net total loss (Table 10-B, Columns II, III and IV). For meat processors, the employment gain accruing from the industrial mix effect was small as compared to employment losses resulting from the differential growth disadvantage, and the result was a large employment loss. This loss may be due to the market condition in which there was a shift from meat production to grain production, for example, "Many Saskatchewan producers left the hog business when strong wheat prices provided producers with a profitable alternative" (DREE, 1979j: 20).

4.7.3 Patterns of Differential Employment Growth and the RDIA Grants

It was noted above that in Saskatchewan, the pattern of differential employment growth reversed from negative during the first period to positive during the second period. In order to describe the association between this pattern of growth and the pattern of RDIA grants, the distribution patterns of RDIA assisted establishments were examined.

Table 10-C

Distribution of RDIA Grants among Various Industries of Saskatchewan: 1970-78

I Manufacturing Industries		II Establishments		III Expected New Jobs		IV % of Employ- ment in 1970	V Types of Indus- tries
Names	SIC Codes	Number	%	Number	%		
Group: I							
Agricultural Implement	(3110)	18	8.3	468	7.8	2.6	GRG
Sash & Door	(2540)	13	6.0	291	4.9	*	GRG
Misc. Machinery & Equip.	(3150)	11	5.1	275	4.6	*	GRG
Commercial Printing	(2860)	9	4.1	63	1.1	2.7	GRG
Iron & Steel Mills	(2910)	7	3.2	623	10.4	*	GRG
Metal Stamping & Coating	(3040)	7	3.2	56	0.9	*	GRG
Non-Commercial Trailer	(3242)	7	3.2	175	2.9	*	GRG
Structural Concrete Prod.	(3542)	5	2.3	40	0.7	*	GRG
Vegetable Oil Mills	(1083)	4	1.8	56	0.9	*	GRG
Plastics Fabricating	(1650)	4	1.8	56	0.9	*	GRG
Architectural Metal	(3039)	4	1.8	60	1.0	*	GRG
Ready-mix Concrete	(3550)	3	1.4	9	0.2	1.5	GRG
Poultry Processors	(1012)	2	0.9	240	4.0	*	GRG
Steel Pipe & Tube Mills	(2920)	2	0.9	246	4.1	*	GRG
Boiler & Plate Works	(3010)	2	0.9	304	5.1	*	GRG
Group: II							
Fabricated Struct. Metal	(3020)	9	4.1	207	3.5	2.8	DRG
Feed Industry	(1060)	7	3.2	63	1.1	0.9	DRG
Men's Clothing	(2431)	7	3.2	581	9.7	*	DRG
Clay Products	(3511)	5	2.3	25	0.4	*	DRG
Communications Equip.	(3350)	4	1.8	328	5.5	*	DRG
Machine Shops	(3080)	3	1.4	114	1.9	*	DRG
Misc. Vehicle Manufact.	(3290)	2	0.9	144	2.4	*	DRG
Group: III							
Meat Processors	(1011)	20	9.2	380	6.3	10.7	GRD
Breweries	(1093)	3	1.4	30	0.5	2.4	GRD
Sawmills	(2513)	1	0.5	80	1.3	2.9	GRD
Group: IV							
Bakeries	(1072)	5	2.3	30	0.5	5.8	DRD
Sub Total		164	75.6	4944	82.6		
The Grouped Ind. & Rest	(9998)	53	24.4	1043	17.4	67.7*	RG
Provincial Total		217	100.0	5987	100.0	100.0	

Note: The industries with an asterisk are subject to disclosure limitations and belong to the Grouped Industries.

Index: GRG = Growing both Nationally and Regionally.

GRD = Growing Nationally but Declining Regionally.

DRD = Declining both Nationally and Regionally.

RG = Declining Nationally but Growing Regionally.

RG = Growing Regionally.

There were sixty-three industrial categories in Saskatchewan, which received RDIA grants. Of the sixty-three industries, forty-one (65.1 per cent) were national growth industries and twenty-two (34.9 per cent) were declining, the majority in both categories of industries had differential growth advantages in the province. Table 10-C illustrates this point. It provides a list of those industries which accounted for 75.6 per cent of RDIA grants and were expected to create 82.6 per cent of new jobs. Columns II and V (Group I) of this table indicate that the RDIA grants were given to a higher number of industries which were not only national growth industries, but also had differential growth advantages in the province. Furthermore, some grants were given to industries which, although declining nationally, had differential growth advantages in the province (see Group II). By contrast, it is evident from Table 10-C (Group IV) that the RDIA grants were given to a few industries which were declining nationally and had differential growth disadvantages in the province. This pattern of distribution indicates that the RDIA programme did invest in industries which had the possibility of providing a more secure future for the province. In addition, the grants given to the province were sufficient in absolute terms to stimulate differential employment growth in the province.

The differential growth in employment of the recipient industries was regressed against the new jobs to deter-

mine the direction and degree of association between them. As expected from the distribution patterns of RDIA grants, the coefficient of correlation (Simple $r = +0.91$) and the regression coefficient ($B = +.45$) were positive and statistically significant at .001 and .01 levels of confidence respectively. The new jobs explained about 82.0 per cent of variations in the differential employment growth. These results indicate that an improvement in the differential employment growth of Saskatchewan may have resulted from the RDIA programme.

About 18.0 per cent of variations in differential employment growth remains unexplained. This could be the result of factors other than the RDIA programme. In order to investigate these factors, the standardized residuals were examined. In the case of agricultural implement, the standardized residual was nearly +2. The employment gain in this industry was even greater than expected. It appears to have resulted from the comparative advantage and increased access to markets. For example, Saskatchewan, being an agricultural province, has a ready demand for agricultural machinery and equipment. In addition to this, during 1970s there was an increase in demand for agricultural products, especially wheat (DREE, 1979j). This increase created an additional market for farm machinery and equipment. Furthermore, in a Multilateral Trade Negotiations (MTN), under the General Agreement on Tariffs and Trade (GATT), "The

United States has agreed...to permit duty free entry for most Canadian produced agricultural machinery, implements and parts" (DREE 1979j: 50). Thus the agricultural implement industry has improved access to the United States' market, which may have stimulated employment growth in this industry.

On the other side of the ledger, in the case of meat processors, the standardized residual was greater than -2. The employment in this industry grew less rapidly than expected. As noted above, it may be due to a shift from meat production to wheat production for which both the price and demand was increasing. The small domestic market may also have put this industry at a comparative disadvantage and caused slower employment growth.

It appears from the above results that Saskatchewan is the third province in which the RDIA programme was most successful. By injecting a very high proportion of national growth industries and new plants, the programme appears to have improved the industrial mix of the province. Furthermore, by providing grants to industries which had comparative advantages in the province, the programme may have stimulated the differential employment growth in the province. The province may benefit from General Agreement on Tariffs and Trade, as was the case for agricultural implement. Furthermore, the backward, forward and final demand linkages of resource boom provide enough opportunities for

the province to diversify its manufacturing base and reduce the leakage effects.

Chapter V

SUMMARY AND CONCLUSION

This chapter briefly summarizes the findings discussed above, draws conclusions, and offers some recommendations. It begins with a discussion of the RDIA programme's effectiveness in achieving its objectives. It then presents a summary of findings and conclusions. Finally, it offers some recommendations for improving the RDIA programme's effectiveness and for future research.

In general, it is concluded that the 'shift and share' technique may be used as an evaluating tool. The present study provides some support and evidence that this technique can be of assistance to the policy maker, such as the Department of Regional Industrial Expansion (DRIE, the former DREE), for monitoring its success and improving its industrial policy. For example, the technique was successful in picking up the structural changes and differential employment growth that took place in slow growing provinces during the 1970-78 period. A province, with a very high proportion of grants in national growth industries, did show an improvement in its industrial mix effect. Similarly, a province, with a very high proportion of grants in industries which had comparative advantages in the province, also

indicated some improvement in the differential employment growth. Furthermore, the technique helps in explaining and determining the causes of poor performance of a province, such as the structural problem or the differential growth problem; pinpointing the industries which were the most troubled ones or those industries which were doing well in the province; and the type of assistance that is required to improve the growth performance of troubled industries and hence the overall growth performance of the province. It also provides insight for further research to determine the factors, other than a government policy, which may be affecting the growth performance of an industry and hence of the province. The usefulness of this technique is also indicated by Andrikopoulos (1977), Paraskevopoulos (1974b), and Buck (1970). Andrikopoulos has concluded that "The present analysis provides, we think, enough support and new evidence concerning the shift-share model and its usefulness in explaining and therefore predicting regional economic growth" (Andrikopoulos, 1977: 60). Similarly, Paraskevopoulos has concluded that "the utilization of the 'shift and share' method in regional economic analysis can be of assistance...in at least two ways: in evaluating the success of regional economic policy and in helping to formulate sound economic policies" (Paraskevopoulos, 1974b: 125). Buck, in spite of leveling a few criticism against shift and share technique, has noted that "Nevertheless the technique has

some value when applied to data relating to a whole series of time-periods, ...can give a broad indication of the importance of industrial structure ...disadvantageous industrial structure means that employment growth in the area will be below the national average in the absence of intervention. The technique summarizes data concisely, and can be of considerable value if employed on a sector-by-sector basis* (Buck, 1970: 450).

5.1 A COMPARISON WITH RDIA OBJECTIVES

The most important objectives of the RDIA programme are to change favourably the industrial structure of the slow growing provinces and to create more jobs and thus to stimulate employment growth in these areas. In order to achieve these objectives, the RDIA programme has attempted to attract manufacturing or processing establishments to these areas by providing incentive grants. The programme's success in fulfilling its objectives ultimately depends on type of policy that has been adopted in these areas, i.e., an adaptive policy or a defensive policy. An adaptive policy is one in which resources are allocated away from economically declining activities (Davenport et al., 1982) or to national growth industries, industries with a strong comparative advantage in the province, and to new plants and new product expansion which are in the national growth sectors. By contrast, a defensive policy is one in which available

resources are allocated to nationally declining industries, industries with no comparative advantages in a province, and for expansion and modernization which are in the national declining sectors. The results of this study indicate that the success of RDIA programme varies from province to province, depending on the allocation of grants to various types of industries, projects and size of establishments.

The industrial structure of a province plays an important role in its growth performance. For example, a province or "a region with a preponderance of industries that are growing rapidly in the national economy will itself grow fast while a region with a large proportion of lagging industries will grow slowly" (Richardson, 1969: 343). This suggests that the industrial structure and growth performance of a province can be improved by injecting national growth industries in the province. A similar hypothesis was developed by Andrikopoulos that "the industrial-mix component of employment should be affected...by policy manipulated variables - that is variables that could inject fast growing industries in the province in order to compensate for their above average of declining industries" (Andrikopoulos, 1977: 49). The results of this study indicate that in the case of Newfoundland, Nova Scotia, New Brunswick, and Saskatchewan, the RDIA programme appears to have achieved some success in reversing the industrial mix effect from negative during the first period to positive during the second period, by providing a very high proportion of grants

(about 70.0 per cent) to national growth industries. However, in the case of Quebec and Manitoba, the RDIA programme was not successful in reversing the industrial mix effect from negative to positive because: (i) these two provinces had a broad industrial base and contained an above average proportion of national declining industries, and (ii) in these provinces, as compared to others, a comparatively higher proportion of grants were given to national declining industries.

It is evident that by injecting a high proportion of national growth industries the industrial mix of a province can be improved. However, if the national growth industries in question have a strong differential growth disadvantage in the province, the employment gains accruing from improved industrial mix would be compensated by employment losses resulting from differential growth, the overall impact would be either a net loss of employment or a very small gain of employment. Hence for improving the industrial mix as well as overall growth performance of a province, the growth industries in question must also have a differential growth advantage in the province.

It is demonstrated by Perloff et al. that "a region with a high share of stagnant industries may grow quite rapidly as a consequence of locational adjustments: existing locational advantages may not have been exploited, and these may attract new industries in the future" (Richardson, 1969:

343). This suggests that the overall growth performance of a province may be improved by attracting selected declining industries for which the province has a strong differential growth advantage. It was noted that in Nova Scotia and Manitoba about 30.0 per cent of RDIA grants were given to national declining industries. This was reflected in their negative proportionality modification shift (PM). Interestingly, in these two provinces the negative PM was associated with a positive differential growth (DG). It is indicative of the fact that these two provinces did well by specializing in national declining industries for which they had a strong differential growth advantage.

Another way of adjusting industrial structure and improving growth performance of a province is to provide a high proportion of grants to new plants and new product expansion because: (i) they can be easily put in the direction of the changing pattern of demand (Johnson and Cathcart, 1979), (ii) they tend to create more jobs, and (iii) the jobs created tend to be a net addition to a province. This adaptive action, however, may be in conflict with a defensive policy in which emphasis is given to maintaining jobs and thus not worsening the situation. The results of this study indicate that in the case of Newfoundland, Nova Scotia, New Brunswick, and Saskatchewan, the RDIA programme gave a very high proportion of grants (about 61.0 per cent) to new plants and new product expansion, the vast majority of which (about 72.0

per cent) were in the national growth industries. By contrast, in the case of Quebec and Manitoba a considerable proportion of grants (about 46.0 per cent and 44.0 per cent respectively) were provided for expansion and modernization. In the case of Prince Edward Island, although 66.0 per cent of grants were given to new plants and new product expansion, a considerable proportion of which (41.0 per cent in case of new plants, and 58.0 per cent in case of new product expansion) were in the national declining sectors.

In a country like Canada where a high proportion of manufacturing establishments is owned by foreign companies, there is a need to attract small and medium sized establishments which are in the high technology and growth sectors (Britton and Gilmour, 1978). It is evident from the reports of Robinson and Storey (1981) that a regional policy should favour small sized establishments, because they happen to be indigenous and have close ties with regional economy. Furthermore, Steed had noted that "Many SMEs (Small-Medium Enterprises) have succeeded by achieving technical competence in producing small batches or custom products and have developed capabilities as manufacturers of producers' goods, ...They have played a significant part as generators of technological innovations both for radical new technology and improvements. ...In a period of...high unemployment, a notable feature of SMEs, particularly new small firms, has been their major contribution to maintaining and generating

employment" (Steed, 1982: 30). The results of this study reveal that in the case of Newfoundland, Nova Scotia, New Brunswick, and Saskatchewan, an extremely high proportion of RDIA grants (about 92.0 per cent) was given to small and medium sized establishments, the vast majority of which (about 74.0 per cent) were in the national growth sectors. It appears from this pattern of distribution that the RDIA programme did allocate its resources to industries which had the possibility of providing a more secure future for these provinces. However, this was not the case in Quebec and Manitoba. In these two provinces, although about 93.0 per cent of RDIA grants were given to small and medium sized establishments, a considerable proportion of these establishments (about 36.0 per cent and 41.0 per cent respectively) were in the national declining sectors. Furthermore, an overall distribution of grants among various size of establishments indicates that some RDIA grants were given to a few, very large, and very capital-intensive establishments. For example, only 2.3 per cent of RDIA assisted establishments in Canada as a whole accounted for 14.0 per cent of incentive grants, and 20.0 per cent of estimated capital cost, but are expected to create only 3.6 per cent of new jobs. There were fourteen establishments with an estimated capital cost of more than two million dollars (of these, four establishments had an estimated capital cost of more than ten million dollars), which received incentive grants

but did not create even a single new job. On the basis of these results it can be concluded that the RDIA programme has favoured the capital-intensive establishments, which apparently is inconsistent with its stated objective of creating more jobs in the slow growth areas. However, before any firm conclusion can be arrived at there is need to evaluate the overall impact and not just the direct employment which was created.

Finally, on the basis of above results, it is concluded that the RDIA programme has been most successful in changing favourably the industrial mix and stimulating the differential employment growth of Newfoundland, Saskatchewan, and Nova Scotia. It appears to have achieved a moderate success in New Brunswick, and a limited success in Manitoba. The programme's effect in the case of Quebec and Prince Edward Island appears to be negative. This conclusion, however, remains tentative in the case of Prince Edward Island, because it is based on a highly aggregated data. It is quite apparent that the RDIA programme is more successful in the more newly industrialized provinces than those which have had a long established industrial history. It may be due to the fact that it is much easier to put growth industries and new plants in the newer industrializing provinces and thus to change an existing industrial structure. In the newer industrializing regions many locational advantages may not have been exploited, which may be an additional advantage to attract new industries. On the

other hand, in older industrialized provinces, it is much more difficult to bring about changes in the industrial structure because it requires replacement of older declining industries. Political pressure and well-organized unions promote a general tendency to maintain older declining industries as well as to adjust them to changing patterns of demand. The replacement of older and declining industries by newer growth industries is a costly affair and is only going to take place gradually. However, if the programme is concerned about changing favourably the industrial structure of slow growth areas, it has to be selective and clearly define its objectives as stated by Mr. Grossman (1979), the previous Ontario Minister of Industry and Tourism, that "Our government does not have the resources...to sustain weak companies at the expense of the strong...we must stop watering down our resources by backing losers simply on the grounds that they need help. Instead, we must do everything we can to pick - and back - the winners" (Steed, 1982: 19).

5.2 SOME RECOMMENDATIONS

This section presents some recommendations for improving the RDIA programme's effectiveness in regional growth, and recommendations for future research. The following are some of the points that have emerged from this study which was mainly concerned with evaluating the programme's success in changing favourably the industrial

structure and stimulating the differential employment growth in the slow growth areas of Canada.

5.2.1 For the RDIA Programme

In order to make the RDIA programme more effective it is recommended that selected manufacturing industries should be given incentive grants, not "all industries". It was noted that not all industries in Canada were growing. Even a nationally "growing industry" was not experiencing rapid growth in all provinces. Similarly, a nationally "declining industry" was not experiencing slow growth in all provinces. In such a situation it would be better if the RDIA programme were more selective and provided incentive grants to most suitable industries in a particular province. For example, first priority should be given to national growth industries which have a strong differential growth advantage in a province. If grants are provided to new plants and new product expansion, they should be in high technology national growth sectors, and in the direction of accommodating changing patterns of demand. Incentive grants may be allocated to a few national declining industries only if they have a very strong comparative advantage in the province.

It was noted that the RDIA programme has favoured some large capital-intensive establishments which are expected to create a comparatively fewer number of jobs than small and medium-sized establishments. Given the limited

capital resources, and the objective of creating more jobs in the slow growth areas, this approach appears to be inconsistent. It would be better if only those large establishments are assisted, which are in the national growth sectors, and are expected to create more direct new jobs as well as indirect jobs. Before giving grants to large establishments, the RDIA programme should have a complete information on their input-output or industrial linkages and multiplier effects on the regional economy. Furthermore, emphasis should be given on not only the quantity of jobs to be created but also on the quality of jobs. Mere creation of jobs, which are low paying and utilize unskilled workers, may lower the average level of income and skill in the slow growing provinces and keep them in a vicious circle of poverty and underdevelopment.

In order to improve the RDIA programme's effectiveness and carry out regional development tasks more efficiently, there is a need for more coordination between the federal and provincial governments. The creation of a new Department of Regional Industrial Expansion (DRIE), and the Ministry of State for Economic and Regional Development (MSERD) may improve interdepartmental coordination, but are not likely to improve federal-provincial coordination (Lithwick, 1982). It is recommended that the General Development Agreements (GDAs), which provided a basic mechanism to coordinate and to cooperate in the economic and socio-economic

development activities for the two levels of government (federal and provincial) as well as for the federal departments, should be given a further consideration before they are allowed to lapse. In this respect, the Standing Senate Committee has also noted that "Because the federal and provincial governments share a common interest in regional development, as well as the powers necessary to promote such development, co-ordination of their activities in this field is essential. The General Development Agreements have been an effective instrument for promoting co-ordination. Accordingly, the decision of the federal government to allow the GDAs to lapse is unwise and should be reconsidered. The federal government should continue to co-ordinate its relations with provincial governments in promoting regional development through broad agreements, drawing on the positive features of the GDAs approach" (Canada, the Standing Senate Committee, 1982: 82).

5.2.2 For Future Research

The main objective of these recommendations is to outline some facts that can facilitate further evaluation of the RDIA programme's effectiveness and thus provide a better understanding of the process and practice of regional development in the slow growing provinces of Canada.

The RDIA programme does have a full range of information in a machine readable form for each establishment which

had accepted incentive grants. No doubt, some of this information may be subject to disclosure limitations under the Regional Development Incentives Act, while some may not. Since the programme deals with public money, some additional (not published in the Monthly Reports) non-confidential statistical information should be made available to a private and independent researcher in a computer readable form. This will not only save the evaluators' enormous amounts of time, but also let them evaluate the impact of the RDIA programme, the way in which public resources were utilized, and the benefit acquired by different regions or provinces.

If it is expensive to provide information in a machine readable form, the establishment based data, published in Monthly Report to Parliament on Regional Development Incentives, need to be modified. It would be better and more useful for researchers: (i) if the plant location are accompanied with geographic codes; (ii) the types of product or process are accompanied with two, three and four-digit SIC codes, and (iii) the types of project are reported in terms of organization and ownership, such as independent or branch plant, indigenous or exogenous plant. When reporting the names of product or process, standard terms (as published in SIC manual or Industrial Commodity Classification manual) should be used. It is also recommended that in case of offers accepted and subsequently declined or withdrawn, the names of the product or process should be listed along

with the name of company, plant location, and date previously reported.

The number of grants provided and direct new jobs created by the RDIA programme is one criterion of measuring the effectiveness of that programme. But there are some other criteria which would be useful in such an evaluation. For example, the quality of jobs: whether the jobs were created by the programme were low paying or high paying and utilized unskilled labour or skilled labour. To what extent has the programme favoured the growth of female rather than male employment? What has happened to employment in non-manufacturing industries? Has there been multiplier effects? Has there been a crowding-out effect? To what extent are the jobs created by the programme stable? In order to include these criteria in a programme evaluation there would be a need to develop data on employment by wage, skill, sex, and time duration; inter-industrial linkage; and industrial closure. If possible a comparable data base should be developed for establishments which have accepted incentive grants from programmes and government agencies other than the RDIA programme. This will help us to know the comparative importance of the RDIA programme.

According to a DREE report (1979k) there were 2,447 establishments which had been completed as of December 31, 1978. This report provides very general information. It would be more useful, if establishment-based data were re-

ported in terms of both estimated "at the time of offer accepted" and actual "at the time of project completion". Further research is required on the basis of actual jobs created by the RDIA programme.

The present study has outlined the RDIA programme's effectiveness in changing favourably the industrial structure and stimulating the differential employment growth at the provincial level. It would be useful to conduct a study at sub-provincial ~~or~~ sub-economic regions to find out how the sub-provincial areas or sub-economic regions are performing within a province. Such a study would require employment and value added data at the three or four-digit SIC codes for each sub-provincial area or sub-economic region, most of which are confidential especially in case of Maritime provinces. This kind of study can be made possible with the help of Statistics Canada and the DRIE (the former DREE).

Thus under the confidentiality limitations and other constraints, the present study was conducted utilizing the most extensive and best available data. Although this study does not indicate the relative importance of RDIA programme in bringing about changes in the industrial structure and stimulating the differential employment growth of the slow growing provinces, it does evaluate the impact of the RDIA programme in allocating resources to industries which had the possibility of providing a more secure future for the slow growing provinces as well as examine the association

between the RDIA programme and the pattern of industrial structural change and differential employment growth. Furthermore, it raises a few questions that have emerged from the present research, i.e. (i) what is the degree and direction of association between the actual jobs created by RDIA assisted establishments and the differential employment growth as well as the industrial structural change of a province, (ii) what are the factors, other than the RDIA programme, which are affecting the differential employment growth in a province, and (iii) what proportion of RDIA grants are needed to improve the industrial mix as well as the differential growth of the province? In addition to these, it also puts forward a series of questions which require further research, i.e. (i) what quality of jobs are created by RDIA assisted establishments, (ii) to what extent are the jobs created by these establishments stable, (iii) whether the vast majority of RDIA assisted establishments are foreign subsidiaries or owned by local Canadians, and (iv) to what extent are these establishments tied to the local economy and have industrial linkages and multiplier effects?

Appendix A

Spatial Distribution of RDIA Net Accepted Offers: 1970-78

I Province/Region	II Establishments		III Estimated Capital Cost in \$000		IV Incentive Grants in \$000		V Expected New Jobs	
	No.	% of Total Persons	Absolute Values	% of Total Values	Absolute Total	% of Total	No.	% of Manuf. Employ.
Newfoundland *	159	3.1	80736	2.3	25808	3.4	4242	2.7
Prince Edward Is.*	148	2.9	41051	1.2	15227	2.0	2697	1.7
Nova Scotia *	392	7.6	341430	9.7	81580	10.8	11456	7.3
New Brunswick *	390	7.6	233880	6.7	72209	9.5	11787	7.5
ATLANTIC REGION	1089	21.2	697097	19.8	194824	25.7	30142	19.1
Quebec *	2779	54.1	1744785	49.6	344182	45.4	90896	57.6
Ontario	358	7.0	398430	11.3	75039	9.9	11906	7.6
Manitoba *	549	10.7	300435	8.5	68041	9.0	13619	8.6
Saskatchewan *	217	4.2	145802	4.2	32409	4.3	5987	3.8
Alberta	81	1.6	191679	5.5	34475	4.6	3330	2.1
PRAIRIE REGION	847	16.5	637916	18.1	134925	17.8	22936	14.5
British Columbia	58	1.1	38739	1.1	9278	1.2	1828	1.2
Territories	5	0.1	573	0.0	157	0.0	32	0.0
SELECTED AREAS	4634	90.2	2888119	82.1	639456	84.3	140644	89.2
CANADA	5136	100.0	3517540	100.0	758407	100.0	157740	100.0

Note: 1. The provinces with an asterisk are included in the Selected Areas.

2. For calculating the number of establishments per 100,000 persons, the 1971 population figures are used.

Appendix B

List of Four-Digit Manufacturing Industries: 1960

SIC Codes	Names	SIC Codes	Names
1011	Slaughtering and Meat Packing Plants	2431	Men's Clothing Factories
1012	Animal Oils and Fats Plants	2432	Men's Clothing Contractors
1013	Sausage and Sausage Casing Mfrs.	2441	Women's Clothing Factories
1030	Poultry Processors	2442	Women's Clothing Contractors
1050	Dairy Factories	2450	Children's Clothing Industries
1070	Process Cheese Manufacturers	2460	Fur Goods Industries
1110	Fish Products Industry	2470	Hat and Cap Industries
1120	Fruit & Veg. Canners & Preservers	2480	Foundation Garment Industry
1230	Feed Manufacturers	2491	Fabric Glove Manufacturers
1240	Flour Mills	2499	Misc. Clothing (n.e.s.) Industry
1250	Breakfast Cereal Manufacturers	2511	Shingle Mills
1280	Biscuits Manufacturers	2513	Sawmills except Shingle Mills
1290	Bakeries	2520	Veneer and Plywood Mills
1310	Confectionery Manufacturers	2541	Sash & Door & Planing Mills (Excluding Hardwood Flooring)
1330	Sugar Refineries	2542	Hardwood Flooring
1350	Vegetable Oil Mills	2560	Wooden Box Factories
1391	Macaroni Manufacturers	2580	Coffin and Casket Industry
1392	Misc. Food Manufacturers	2591	Wood Preservation
1410	Soft Drink Manufacturers	2592	Wood Handles and Turning
1430	Distilleries	2593	Woodenware
1450	Breweries	2594	Cooperage
1470	Wineries	2599	Misc. Wood Industries, n.e.s.
1510	Leaf Tobacco Processing	2610	Household Furniture Industry
1530	Tobacco Products Manufacturers	2640	Office Furniture Industry
1610	Rubber Footwear Manufacturers	2660	Other Furniture Industries
1630	Rubber Tire and Tube Manufacturers	2680	Electric Lamp and Shade Industry
1690	Other Rubber Industries	2710	Pulp and Paper Mills
1720	Leather Tanneries	2720	Asphalt Roofing Manufacturers
1740	Shoe Factories	2731	Folding Box and Set-up Box Mfrs.
1750	Leather Glove Factories	2732	Corrugated Box Manufacturers
1791	Leather Belting Manufacturers	2733	Paper Bag Manufacturers
1792	Boot and Shoe Findings Manufacturers	2740	Other Paper Converters
1799	Misc. Leather Products Mfrs.	2861	Printing and Bookbinding
1830	Cotton Yarn and Cloth Mills	2862	Lithographing
1930	Wool Yarn Mills	2871	Engraving and Duplicate Plates
1970	Wool Cloth Mills	2872	Trade Composition or Typesetting
2010	Synthetic Textile Mills	2880	Publishing Only
2110	Fibre Preparing Mills	2890	Printing and Publishing
2120	Thread Mills	2910	Iron and Steel Mills
2130	Cordage and Twine Industry	2920	Steel Pipe and Tube Mills
2140	Narrow Fabric Mills	2940	Iron Foundries
2150	Pressed and Punched Felt Mills	2950	Smelting and Refining
2160	Carpet, Mat and Rug Industry	2960	Aluminum Rolling, Casting & Extruding
2180	Textile Dyeing and Finishing Plants	2970	Copper and Alloy Rolling, Casting and Extruding
2190	Linoleum and Coated Fabrics Industry	2980	Metal Rolling, Casting and Extruding, n.e.s.
2210	Canvas Products Industry	3010	Boiler and Plate Works
2230	Cotton and Jute Bag Industry	3020	Fabricated Structural Metal Industry
2291	Automobile Fabric Accessory Mfrs.	3030	Ornamental & Architectural Metal Ind.
2292	Embroidery, Pleating, hemstitch. Mfrs.	3040	Metal Stamping, Pressing and Coating Industry
2299	Misc. Textiles (n.e.s.) Ind.		
2310	Hosiery Mills		
2390	Other Knitting Mills		
2420	Custom Tailoring Shops (1961 Survey)		

Source: Standard Industrial Classification Manual 1960, Catalogue No. 12-501, pp. 49-51.

List of Four-Digit Manufacturing Industries: 1960 - Concluded

SIC Codes	Names	SIC Codes	Names
3050	Wire and Wire Products Manufacturers	3651	Petroleum Refining
3060	Hardware, Tool & Cutlery Mfrs.	3652	Mfrs. of Lubricating Oils & Greases
3070	Heating Equipment Manufacturers	3690	Other Petroleum & Coal Products Ind.
3080	Machine Shops	3710	Explosive & Ammunition Manufacturers
3090	Misc. Metal Fabricating Industries	3720	Manufacturers of Mixed Fertilizers
3110	Agricultural Implement Industry	3730	Mfrs. of Plastics & Synthetic Resins
3150	Misc. Machinery & Equip. Mfrs.	3740	Mfrs. of Pharmaceuticals & Medicines
3160	Commercial Refrigeration and Air Conditioning Equipment Mfrs.	3750	Paint and Varnish Manufacturers
3180	Office & Store Machinery Mfrs.	3760	Mfrs. of Soap and Cleaning Compounds
3210	Aircraft and Parts Manufacturers	3770	Manufacturers of Toilet Preparations
3230	Motor Vehicle Manufacturers	3780	Manufacturers of Industrial Chemicals
3240	Truck Body and Trailer Manufacturers	3791	Manufacturers of Printing Inks
3250	Motor Vehicle Parts and Accessories Manufacturers	3799	Other Chemical Industries, n.e.s.
3260	Railroad Rolling Stock Industry.	3811	Instrument and Related Products Mfrs.
3270	Shipbuilding and Repair	3812	Clock and Watch Manufacturers
3280	Boatbuilding and Repair	3813	Orthopaedic & Surgical Appliances
3290	Misc. Vehicle Manufacturers	3814	Ophthalmic Goods Manufacturers
3310	Mfrs. of Small Electrical Appliances	3815	Dental Laboratories
3320	Manufacturers of Major Appliances (Electric and Non-Electric)	3820	Jewellery & Silverware Manufacturers
3340	Manufactures of Household Radio and Television Receivers	3830	Broom, Brush and Mop Industry
3350	Communications Equipment Mfrs.	3840	Venetian Blind Manufacturers
3360	Mfrs. of Electrical Industrial Equip.	3850	Plastic Fabricators, n.e.s.
3370	Battery Manufacturers	3931	Sporting Goods Industry
3380	Mfrs. of Electric Wire & Cable	3932	Toys and Games Industry
3390	Mfrs. of Misc. Electrical Products	3950	Fur Dressing and Dyeing Industry
3410	Cement Manufacturers	3970	Signs and Displays Industry
3430	Lime Manufacturers	3981	Button, Buckle & Fastener Industry
3450	Gypsum Products Manufacturers	3982	Candle Manufacturers
3470	Concrete Products Manufacturers	3983	Hair Goods Manufacturers
3480	Ready-Mix Concrete Manufacturers	3984	Artificial Flowers & Feathers Mfrs.
3511	Clay Prods. Mfrs. (Domestic Clays)	3985	Model and Pattern Manufacturers
3512	Clay Prods. Mfrs. (Imported Clays)	3986	Musical Instruments Industry
3520	Refractories Manufacturers	3987	Sound Recording Industry
3530	Stone Products Manufacturers	3988	Typewriter Supplies Manufacturers
3540	Mineral Wool Manufacturers	3989	Fountain Pen & Pencil Manufacturers
3550	Asbestos Products Manufacturers	3993	Smokers' Supplies Manufacturers
3561	Glass Manufacturers	3995	Stamp and Stencil (Rubber or Metal) Manufacturers
3562	Glass Products Manufacturers	3996	Statuary, Art Goods, Regalia and Novelty Manufacturers
3570	Abrasives Manufacturers	3997	Umbrella Manufacturers
3590	Other Non-Metallic Mineral Prod. Ind.	3998	Artificial Ice Manufacturers
		3999	Other Miscellaneous Industries

Source: Standard Industrial Classification Manual 1960, Catalogue No. 12-501, pp. 49-51.

Appendix C

List of Four-Digit Manufacturing Industries: 1970

SIC Codes	Names	SIC Codes	Names
1011	Slaughtering and Meat Processors	2460	Fur Goods Industry
1012	Poultry Processors	2480	Foundation Garment Industry
1020	Fish Products Industry	2491	Fabric Glove Manufacturers
1031	Fruit and Veg. Cannery & Preservers	2492	Hat and Cap Industry
1032	Frozen Fruit & Vegetable Processors	2499	Misc. Clothing Inds., n.e.s.
1040	Dairy Products Industry	2511	Shingle Mills
1050	Flour & Breakfast Cereal Prods. Ind.	2513	Sawmills and Planing Mills
1060	Feed Industry	2520	Veneer and Plywood Mills
1071	Biscuits Manufacturers	2541	Sash, Door and Other Millwork, n.e.s.
1072	Bakeries	2542	Hardwood Flooring Plants
1081	Confectionery Manufacturers	2543	Pre-fabricated Buildings (Wood Frame)
1082	Cane and Beet Sugar Processors	2544	Mfrs. of Wooden Kitchen Cabinets
1083	Vegetable Oil Mills	2560	Wooden Box Factories
1089	Misc. Food Processors, n.e.s.	2580	Coffin and Casket Industry
1091	Soft Drink Manufacturers	2591	Wood Preservation Industry
1092	Distilleries	2592	Wood Handles and Turning Industry
1093	Breweries	2593	Manufacturers of Particle Board
1094	Wineries	2599	Misc. Wood Industries, n.e.s.
1510	Leaf Tobacco Processors	2611	Furniture Re-upholstery & Repair
1530	Tobacco Products Manufacturers	2619	Household Furniture Mfrs., n.e.s.
1623	Rubber Tire and Tube Mfrs.	2640	Office Furniture Manufacturers
1624	Rubber Footwear Mfrs.	2660	Misc. Furniture & Fixtures Mfrs.
1629	Misc. Rubber Prods. Mfrs.	2680	Electric Lamp and Shade Mfrs.
1650	Plastics Fabricating Industry, n.e.s.	2710	Pulp and Paper Mills
1720	Leather Tanneries	2720	Asphalt Roofing Manufacturers
1740	Shoe Factories	2731	Folding Carton and Set-Up Box Mfrs.
1750	Leather Glove Factories	2732	Corrugated Box Manufacturers
1792	Boot and Shoe Findings Mfrs.	2733	Paper and Plastic Bag Manufacturers
1799	Misc. Leather Products Mfrs.	2740	Misc. Paper Converters
1810	Cotton Yarn and Cloth Mills	2860	Commercial Printing
1820	Wool Yarn and Cloth Mills	2870	Platemaking, Typesetting etc. Ind.
1831	Fibre and Filament Yarn Mfrs.	2880	Publishing Only
1832	Throwsters, Spun Yarn & Cloth Mills	2890	Publishing and Printing
1840	Cordage and Twine Industry	2910	Iron and Steel Mills
1851	Fibre Processing Mills	2920	Steel Pipe and Tube Mills
1852	Pressed and Punched Felt Mills	2940	Iron Foundries
1860	Carpet, Mat and Rug Industry	2950	Smelting and Refining
1871	Cotton and Jute Bags Manufacturers	2960	Aluminum Rolling, Casting etc.
1872	Canvas Products Manufacturers	2970	Copper & Copper Alloy Rolling etc.
1880	Automobile Fabric Accessories Ind.	2980	Metal Rolling, Casting etc., n.e.s.
1891	Thread Mills	3010	Boiler and Plate Works
1892	Narrow Fabric Mills	3020	Fabricated Structural Metal Ind.
1893	Embroidery, Pleating, Hemstitching	3031	Metal Door and Window Manufacturers
1894	Textile Dyeing and Finishing Plants	3039	Ornamental & Architectural Metal, n.e.s.
1899	Misc. Textile Inds., n.e.s.	3041	Metal Coating Industry
2310	Hosiery Mills	3042	Metal Stamping and Pressing Ind.
2391	Knitted Fabric Manufacturers	3050	Wire and Wire Products Mfrs.
2392	Other Knitting Mills	3060	Hardware, Tool and Cutlery Mfrs.
2431	Men's Clothing Factories	3070	Heating Equipment Manufacturers
2432	Men's Clothing Contractors	3080	Machine Shops
2441	Women's Clothing Factories	3090	Misc. Metal Fabricating Inds.
2442	Women's Clothing Contractors	3110	Agricultural Implement Industry
2450	Children's Clothing Industry		

Source: Standard Industrial Classification Manual 1970, Catalogue No. 12-501E, pp. 47-49.

List of Four-Digit Manufacturing Industries: 1970 - Concluded

SIC Codes	Names	SIC Codes	Names
3150	Misc. Machinery and Equipment Mfrs.	3599	Misc. Non-Metallic Mineral Products., n.e.s.
3160	Commercial Refrigeration and Air Conditioning Equipment Mfrs.	3651	Petroleum Refining
3180	Office and Store Machinery Mfrs.	3652	Mfrs. Lubricating Oils and Greases
3210	Aircraft & Aircraft Parts Mfrs.	3690	Misc. Petroleum & Coal Prods. Inds.
3230	Motor Vehicle Manufacturers.	3720	Manufacturers of Mixed Fertilizers
3241	Turck Body Manufacturers	3730	Mfrs. of Plastics & Synthetic Resins
3242	Non-Commercial Trailer Mfrs.	3740	Mfrs. Pharmaceuticals and Medicine
3243	Commercial Trailer Manufacturers	3750	Paint and Varnish Manufacturers
3250	Motor Vehicle Parts & Accessories	3760	Mfrs. of Soap and Cleaning Compounds
3260	Railroad Rolling Stock Industry	3770	Mfrs. of Toilet Preparations
3270	Shipbuilding and Repair	3781	Mfrs. of Pigments and Dry Colours
3280	Boatbuilding and Repair	3782	Industrial Chem. (Inorganic), n.e.s.
3290	Miscellaneous Vehicle Manufacturers	3783	Industrial Chemicals (Organic), n.e.s.
3310	Mfrs. of Small Electrical Appliances	3791	Manufacturers of Printing Inks
3320	Manufacturers of Major Appliances	3799	Misc. Chemicals Inds., n.e.s.
3330	Manufacturers of Lighting Fixtures	3911	Instrument & Related Products Mfrs.
3340	Mfrs. of Household Radio and TV.	3912	Clock and Watch Manufacturers
3350	Communications Equipment Mfrs.	3913	Orthopaedic & Surgical Appliance
3360	Mfrs. of Electrical Industrial Equip.	3914	Ophthalmic Goods Manufacturers
3380	Mfrs. of Electric Wire and Cable	3915	Dental Laboratories
3391	Battery Manufacturers	3920	Jewellery and Silverware Industry
3399	Mfrs. Misc. Electrical Prods., n.e.s.	3931	Sporting Goods Manufacturers
3511	Clay Products Mfrs. (Domestic Clays)	3932	Toys and Games Manufacturers
3512	Clay Products mfrs. (Imported Clays)	3970	Signs and Displays Industry
3520	Cement Manufacturers	3991	Broom, Brush and Mop Manufacturers
3530	Stone Products Manufacturers	3992	Button, Buckle and Fastener Mfrs.
3541	Concrete Pipe Manufacturers	3993	Floor Tile, Linoleum etc. Mfrs.
3542	Mfrs. Structural Concrete Products	3994	Sound Recording & Musical Instrument
3549	Concrete Products Mfrs., n.e.s.	3995	Stamp and Stencil Manufacturers
3550	Ready-Mix Concrete Manufacturers	3996	Pen and Pencil Manufacturers
3561	Glass Manufacturers	3997	Typewriter Supplies Manufacturers
3562	Glass Products Manufacturers	3998	Fur Dressing and Dyeing
3570	Abrasives Manufacturers	3999	Other Misc. Manufacturing Inds.
3580	Lime Manufacturers		
3591	Refractories Manufacturers		

Source: Standard Industrial Classification Manual 1970, Catalogue No. 12-501E, pp. 47-49.

Appendix D

Spatial Distribution of RDIA Grants - Type of Projects by Type of Industries: 1970-78

I Province	II New Plants			III New Product Expansion			IV Expansion & Modernization		
	% of TRD	% in NGI	% in NDI	% of TRD	% in NGI	% in NDI	% of TRD	% in NGI	% in NDI
Newfoundland	52.0	73.0	27.0	10.0	94.0	6.0	38.0	89.0	11.0
Prince Edward Is.	53.0	59.0	41.0	13.0	42.0	58.0	34.0	55.0	45.0
Nova Scotia	48.0	67.0	33.0	13.0	79.0	21.0	39.0	70.0	30.0
New Brunswick	50.0	71.0	29.0	11.0	66.0	34.0	39.0	64.0	36.0
Quebec	40.0	68.0	32.0	14.0	64.0	36.0	46.0	63.0	37.0
Manitoba	49.0	68.0	32.0	7.0	65.0	35.0	44.0	66.0	34.0
Saskatchewan	54.0	67.0	33.0	6.0	58.0	42.0	40.0 (32.0)	63.0 84.0	37.0 16.0)*

Note: * Values within parentheses are for expansion only.

Index:

% of TRD = Per Cent of Total RDIA Grants.

% in NGI = Per Cent in National Growth Industries.

% in NDI = Per Cent in National Declining Industries.

Appendix E

Spatial Distribution of RDIA Grants - Size of Establishments by Type of Industries: 1970-78

I Province	II Small & Medium Size			III Large Capital-Intensive			IV Other Size		
	% of TRD	% in NGI	% in NDI	% of TRD	% in NGI	% in NDI	% of TRD	% in NGI	% in NDI
Newfoundland	92.5	85.0	15.0	5.0	88.0	12.0	2.5	75.0	25.0
Prince Edward Is.	97.4	73.0	27.0	2.1	50.0	50.0	0.7	100.0	0.0
Nova Scotia	92.8	74.0	26.0	5.2	60.0	40.0	2.0	63.0	37.0
New Brunswick	89.5	71.0	29.0	7.9	80.0	20.0	2.6	60.0	40.0
Quebec	91.9	64.0	36.0	3.9	60.0	40.0	4.2 (1.0)	36.0 23.0	64.0 77.0)*
Manitoba	94.5	59.0	41.0	2.9	72.0	28.0	2.6	31.0	69.0
Saskatchewan	89.9	67.0	33.0	5.9	89.0	11.0	4.1	44.0	56.0

Note: * Values within parentheses are for "Small-Large" sized establishments only.

Index: % of TRD = Per Cent of Total RDIA Grants.

% in NGI = Per Cent in National Growth Industries.

% in NDI = Per Cent in National Declining Industries.

Appendix F

Distribution of RDIA Grants - Province by Type of Industries: 1970-78

Province	Index	Declining Industries in E & V	Growing Industries in E & V	Growing Industries in E Only	Growing Industries in V Only	Row Total
Nfld.	Number of Grants	32	98	27	0	159
	% of Prov. Total	20.1	61.6	17.0	0.0	100.0
	% of National Total	2.0	4.2	2.6	0.0	
P.E.I.	Number of Grants	67	64	16	1	148
	% of Prov. Total	45.3	43.2	10.8	0.7	100.0
	% of National Total	4.1	2.8	1.6	0.9	
N.S.	Number of Grants	118	192	69	9	392
	% of Prov. Total	30.1	49.0	17.6	2.3	100.0
	% of National Total	7.2	8.3	6.7	8.5	
N.B.	Number of Grants	116	194	65	10	390
	% of Prov. Total	29.7	49.7	16.7	2.6	100.0
	% of National Total	7.1	8.4	6.3	9.4	
Quebec	Number of Grants	940	1178	586	51	2779
	% of Prov. Total	33.8	42.4	21.1	1.8	100.0
	% of National Total	57.4	50.8	57.1	48.1	
Ontario	Number of Grants	92	180	64	16	358
	% of Prov. Total	25.7	50.3	17.9	4.5	100.0
	% of National Total	5.6	7.8	6.2	15.1	
Manitoba	Number of Grants	167	207	158	13	549
	% of Prov. Total	30.4	37.7	28.8	2.4	100.0
	% of National Total	10.2	8.9	15.4	12.3	
Sask.	Number of Grants	63	114	34	5	217
	% of Prov. Total	29.0	52.5	15.7	2.3	100.0
	% of National Total	3.8	4.9	3.3	4.7	
Alberta	Number of Grants	29	48	2	1	81
	% of Prov. Total	35.8	59.3	2.5	1.2	100.0
	% of National Total	1.8	2.1	0.2	0.9	
B.C.	Number of Grants	13	41	4	0	58
	% of Prov. Total	22.4	70.7	6.9	0.0	100.0
	% of National Total	0.8	1.8	0.4	0.0	
Territ.	Number of Grants	2	2	1	0	5
	% of Territ. Total	40.0	40.0	20.0	0.0	100.0
	% of National Total	0.1	0.1	0.1	0.0	
CANADA	Number of Grants	1639	2318	1026	106	5136
	% of National Total	31.9	45.1	20.0	2.1	100.0
		100.0	100.0	100.0	100.0	

Note: The row total may not match with the added total of each industry type because a few industries were not classified.

Index: E = Employment.
V = Value Added.

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