CANADIAN EMPLOYMENT GROWTH AND STRUCTURAL ADAPTATION 1961-1971[1]

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Introduction

The purpose of this paper is to apply a modified Shift-Share model[2] to the problem of delineating changes in the employment dimension of the Canadian provinces over the period 1961-1971. In doing so we propose to provide a technical note on the Shift-Share technique and an empirical offering.

The first section briefly describes the methodology, aims and shortcomings of the Shift-Share technique. The second section expands on a modified version of the Shift-Share model, and the model itself is specified. The results generated by the model are analyzed in the third section, and finally the conclusions of the study are presented.

Methodology

The Shift-Share technique, pioneered by Dunn [12] and Perloff, Dunn *et al.* [22], divides the growth of a regional variable such as population, income, or employment into three components, the regional Share, the proportionality Shift, and the differential

[2]One of the major problems in applying the "classical" Shift-Share technique is that the initial weights for industrial composition assumed in the formulation do not reflect changes in industry mix within the reference period. This problem was addressed by Stilwell [24], among others, in a study of the relationship between the industrial composition and the growth of employment in the Standard Regions of the U.K. over the period 1959-1967. Based on the computational findings generated by the modified Shift-Share model, he suggests that regional policy in the 1960s has had some success in diverting the expansion of the national growth industries from the prosperous regions to the less prosperous ones.

Shift.[3] The latter two components have been termed the composition and competitive effects, respectively. A number of studies in the area of regional growth and regional industrial mix have used the technique of Shift-Share analysis [1; 7; 11; 12; 15; 16; 17; 22; 27; 14].

The regional share is the expected growth of employment in the region if its total employment were to grow at the same rate as the national average over the reference period. The difference between the region's and the nation's growth of employment is captured by the total shift of employment; i.e., the net gain or loss to the region over the reference period.

Of the total shift, the proportionality shift adds a positive (negative) factor to the overall growth of regional employment if the region has a favourable (unfavourable) distribution of fast growing industries; the differential shift adds a positive (negative) factor to the overall growth of regional employment if the region's industries grow faster (slower) than similar industries in other areas of the nation. The proportionality shift (or industrial mix) component reflects the effect on employment growth of a region's initial industrial pattern while the differential shift (or regional) component reflects the competitiveness of its industries vis-à-vis the rest of the nation during that period.

The Shift and Share technique has been criticized on a number of grounds both at the theoretical and empirical levels. The major theoretical objection is leveled by Houston [18]. His objection is principally with the model's failure to provide a theory of differential growth rates; that is, it does not provide for an *ex-ante* theory of regional growth but, rather, only for an *ex-post* classification of the growth of the reference variable in an historical sense. This is indeed the case, for the Shift-Share model does not contain any behavioural equations.[4]

At the level of application, the Shift-Share technique suffers extensively from the fact that the sizes of the proportionality and differential shifts are sensitive to the level of sectoral aggregation [18; 8; 4]. As the number of sectors (or subsectors if one is performing a one sector analysis) is increased, the differential shift tends to vanish. That is, with disaggregation the growth of regional sectors

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[3] In studies analyzing the Shift-Share model in the United States, regions have often been defined in terms of several States aggregated into larger regions. In this study, provinces will not be aggregated into regions but will be studied as regions in themselves.

[4] Although the Shift-Share model has no explanatory power to add to regional growth theory, Chalmers and Beckhelm [9], among others, have attempted to assign a behavioural content to the Shift-Share technique in their study. Berzeg [3] converts the Shift-Share identity into an estimable stochastic formulation so as to quantitatively test several hypotheses.

(subsectors) more closely approaches (or approximates) the growth of the corresponding national sectors (subsectors). In the limit the differential shift becomes zero when the disaggregation is carried to the firm or plant level.

As Houston [18: 580] has pointed out, however, a small step in the disaggregation process does not necessarily lead to a greater proportionality shift. In any event, Stilwell [24: 166] argues that the answer to the problem is not "the finer the better", as one might initially conclude, since, in the limit, the differential shift is in fact reduced to zero.

Modified Shift-Share Model

The modified Shift-Share model confronts the fundamental problem, which is the loss of applicability in identifying the industrial mix's full impact in determining the overall regional growth rate relative to the national average.

The proportionality shift, which purports to measure the contribution of the region's industrial mix to the region's growth, and the differential shift, which reflects factors affecting regional growth other than the industrial mix (such as the comparative advantage, population migration, or government policy), are interdependent because of interindustry linkages and secondary multiplier effects that occur within and between regions. This phenomenon will cause the proportionality shift to be understated [19]. The problem is resolved, however, by regarding the proportionality shift as a minimum estimate of the effect of the industrial mix on employment growth [24].

In general, there is not a great deal of controversy surrounding the interpretation of the proportionality shift. If it is positive (negative) then the region's growth (loss) of employment can be attributed to the region's favourable (unfavourable) industrial composition. The proportionality shift does not explain, as a bona fide growth theory would, what gave the region its initial advantage. Furthermore, it does not give any indication of the future prospects for the region in its standard form. Herein lies the importance of the differential shift.

Embedded in the differential shift are all the important demand and supply, input-output, and location theory considerations that affect the competitive position of the region's industrial structure over the reference period. The differential shift, therefore, essentially indicates the response of a region's industrial mix to demand and supply conditions over time at both the regional and national level, in that it illustrates that some regions gain an advantage in relation to other regions in their access to markets and to inputs for one or more specific activities. Although not necessarily

explaining the causes of these changes in the industrial structure, the differential shift, or a modification of it, may be utilized to determine if a region has improved upon its industrial mix.

In arriving at the modified version of the Shift-Share model, the technique is to subtract the employment growth expected in the region, given its industrial mix at the start of the period, from the employment growth expected, given the industrial mix at the end of the period. By performing this operation on the identity the reversed proportionality shift is generated. It represents a reversing of the standardization procedure in that final period employment weights rather than base period employment weights are used in the calculation of the expected growth. Furthermore, if the reversed proportionality shift (RPS) is subtracted from the proportionality shift (PS), the result adds another shift component, the proportionality modification shift (PMS), to the analysis. The PMS may be visualized as representing the shift in employment which comes about from the modification of the region's industrial mix over the reference period. If the PMS is positive (negative), it would indicate that the region has a more favourable (less favourable) industrial mix at the end of the period than it had at the start of the period.

The Shift-Share model along with its modified version may be stated mathematically as follows:[5]

Total growth in
region j $\qquad = \Sigma_i E_t - \Sigma_i E_o$ (1)

Regional share $\qquad = \Sigma_i E_o (\Sigma_i \Sigma_j E_t / \Sigma_i \Sigma_j E_o) - \Sigma_i E_o$ (2)

Total shift $\qquad = \Sigma_i E_t - \Sigma_i E_o (\Sigma_i \Sigma_j E_t / \Sigma_i \Sigma_j E_o)$ (3)
(Proportionality shift
+ Differential shift)

Proportionality Shift $\quad = \Sigma_i E_o \{(\Sigma_j E_t / \Sigma_j E_o) - (\Sigma_i \Sigma_j E_t / \Sigma_i \Sigma_j E_o)\}$ (4)
(PS)

Differential Shift (DS) $\; = \Sigma_i \{E_t - E_o (\Sigma_j E_t / \Sigma_j E_o)\}$ (5)

Reverse proportionality $= \Sigma_i E_t \{(\Sigma_i \Sigma_j E_o / \Sigma_i \Sigma_j E_t) - (\Sigma_j E_o / \Sigma_j E_t)\}$ (6)
shift

Proportionality $\qquad = \Sigma_i [E_t \{(\Sigma_i \Sigma_j E_o / \Sigma_i \Sigma_j E_t) - (\Sigma_j E_o / \Sigma_j E_t)\}$
modification shift $\qquad \quad -E_o \{(\Sigma_j E_t / \Sigma_j E_o) - (\Sigma_i \Sigma_j E_t / \Sigma_i \Sigma_j E_o)\}]$ (7)
(PMS)

[5]To avoid confusion in using all the different algebraic notations, we have adopted Stilwell's formulation of the modified Shift-Share model, using the same algebraic notations [24].

Residual differential $\quad = \Sigma_i [E_t - E_o (\Sigma_i \Sigma_j E_t / \Sigma_i \Sigma_j E_o)$
shift $\qquad\qquad\qquad -E_t \{(\Sigma_i \Sigma_j E_o / \Sigma_i \Sigma_j E_t) - (\Sigma_j E_o / \Sigma_j E_t)\}]$ (8)

where $\quad E_{ij} \quad =$ number employed in the ith industry in region j

$\quad \Sigma_i E_{ij} \quad =$ number employed in all industry in region j

$\quad \Sigma_j E_{ij} \quad =$ number employed in the ith industry in all regions

$\quad \Sigma_i \Sigma_j E_{ij} \quad =$ number employed in all industry in all regions

The subscript o indicates the base year and the subscript t denotes the terminal year of the period studied. To simplify the notation, the following analysis omits the i, j, subscripts which should be attached to each E; however, they are shown beneath the Σ sign to indicate the range of summation.

This model was employed to isolate changes in employment from 1961 to 1971 for all the provinces. The twelve sector classification of employment was taken as the data base.[6]

Empirical Results

Table 1 presents the national and provincial employment changes over the 1961-71 period. The "have" provinces accounted for 53.47 percent of total Canadian employment in 1961 while the "have-not" provinces accounted for the remaining 46.53 percent.[7]

[6]The analysis is restricted to the following twelve sectors: Agriculture; Forestry; Fishing and Trapping; Mines, Quarries and Oil Wells; Manufacturing; Construction; Transportation, Communication and Other Utilities; Trade, Finance, Insurance and Real Estate; Community, Business and Personal Service Industries; Public Administration and Defence; and Industry unspecified or undefined. Although this is a highly aggregated data base, its use may, in any event, be beneficial in providing a more meaningful interpretation of the results. This is because random structural factors in disaggregated industrial and spatial groupings such as company organization and product homogeneity, which are not incorporated in the calculation of the Shift components, might result in meaningless values for the estimated growth components, even if the Shift and Share method is conceptually sound [8].

[7]For the purpose of dichotomization, provinces which receive negative equalization payments are classified as "haves" (developed) and the ones receiving positive payments as "have nots" (less developed). Thus, Ontario, Alberta, and British Columbia are classified as developed, while Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Quebec, Saskatchewan, and Manitoba are classified as less developed provinces. For a full treatment of the "equalization scheme" see Courchene and Beavis [10].

Table 1

**THE GROWTH OF EMPLOYMENT BY PROVINCES AND CANADA,
1961-1971**

Province	Percentage of National Employment in 1961 $100\Sigma_i E_0/\Sigma_i\Sigma_j E_0$	Absolute Increase in Employment $\Sigma_j(E_t\text{-} E_0)$		Percentage Increase in Employment $100\Sigma_i(E_t\text{-} E_0)/\Sigma_i E_0$	Percentage of National Increase in Employment $100\Sigma_i(E_t\text{-} E_0)/\Sigma_i\Sigma_j(E_t\text{-} E_0)$
Newfoundland	1.73	+	35,685	31.77	1.66
Prince Edward Island	.53	+	8.932	26.16	.41
Nova Scotia	3.66	+	49.616	20.95	2.30
New Brunswick	2.76	+	45,175	25.33	2.10
Quebec	27.32	+	401,036	22.68	18.62
Ontario	36.98	+	959,345	40.09	44.52
Manitoba	5.29	+	71,268	20.80	3.32
Saskatchewan	5.03	+	45,539	13.99	2.12
Alberta	7.56	+	198,769	40.61	9.23
British Columbia	8.93	+	332,452	57.55	15.44
Yukon	.21	+	5,480	40.21	.25
Canada	100.00	+	2,153,297	33.27	100.00

Source: Computations based on Canadian labour force figures obtained from Statistics Canada, *The Labour Force*, Cat. 71-001.

Over the period 1961-71, the three "have" provinces managed to capture 69.19 percent of the growth of national employment while the "have-not" provinces managed only 30.61 percent. This preliminary analysis indicates that a significant geographic redistribution of employment has occurred in favour of the developed provinces. Furthermore, the provinces in which employment grew fastest were also those that had the highest average per capita incomes at the start of the period as indicated by their "have" status. This tentatively suggests that the experience of the 1960s was one of increasing provincial imbalance. Further examination of the possible causes of provincial variation in employment growth over these years, by isolating the provincial share and shift components, can give a clearer insight into whether favourable (unfavourable) growth was due to the provinces' more (less) favourable industrial mix or, rather, whether it was due to other reasons such as a favourable (unfavourable) competitive position vis-à-vis similar sectors in other provinces. Our results are presented in Table 2.

The only provinces to realize positive total shifts over the period were the "have" provinces; Ontario, Alberta, and British Columbia. The remaining provinces all realized negative total shifts. The most interesting information provided by this table is found in the composition of the total shift in terms of its two sub-components: the proportionality shift and the differential shift. The proportionality shift was found to be positive in the case of Ontario, British Columbia, and Quebec. It was negative in the case of all the remaining provinces. So two "have" provinces and one "have-not" province can be said to have had an initial industrial structure very favourable to growth.

Quebec's positive proportionality shift is totally offset by a very substantial negative differential shift that resulted in an overall net downward shift of employment in the province over the period. Apparently Quebec, which accounted for 33.21 percent of all manufacturing employment in 1961 [6:16] was not able to compete effectively with other provinces, most notably Ontario, Alberta, and British Columbia, in terms of employment growth; thus its industrial mix, although ostensibly favourable for growth, diminished somewhat over the period.

On the other hand, Alberta's negative proportionality shift was more than offset by a very favourable differential shift. It appears that Alberta's industrial mix was extremely competitive relative to its national counterparts and thus was able to overcome any initial disadvantage of its industrial mix. Essentially this is seen in the fact that although all areas increased their output in mining, construction, and energy related industries, Alberta achieved by far the greatest gains.

Table 2

ANALYSIS OF PROVINCIAL PATTERN OF EMPLOYMENT GROWTH, 1961-1971

Province	National Share (2) and as Percentage of Employment* 1961		Total Shift (3) and as Percentage of Employment 1961**		Proportionality Shift (4) and as Percentage of Employment 1961		Differential Shift (5) and as Percentage of Employment 1961	
Newfoundland	37,368	(33.27)	- 1,683	(- 1.50)	- 2,525	(- 2.25)	+ 842	(+ .75)
Prince Edward Island	11,362	(33.27)	- 2,430	(- 7.12)	- 4,278	(-12.53)	+ 1,848	(+ 5.41)
Nova Scotia	78,795	(33.27)	- 29,179	(- 12.32)	- 3,236	(- 1.37)	- 25,943	(- 10.95)
New Brunswick	59,343	(33.27)	- 14,168	(- 7.94)	- 5,380	(- 3.02)	- 8,788	(- 4.92)
Quebec	588,294	(33.27)	- 187,258	(- 10.59)	+39,888	(+2.26)	- 227,146	(- 12.85)
Ontario	796,211	(33.27)	+163,134	(+ 6.82)	+36,055	(+1.51)	+127,079	(+ 5.31)
Manitoba	114,008	(33.27)	- 42,740	(- 12.44)	- 13,022	(- 3.80)	- 29,718	(- 8.64)
Saskatchewan	108,312	(33.27)	- 62,773	(- 19.28)	- 43,581	(-13.39)	- 19,192	(- 5.89)
Alberta	162,872	(33.27)	+ 35,897	(+ 7.33)	- 26,309	(- 5.37)	+ 62,206	(+12.70)
British Columbia	192,197	(33.27)	+140,255	(+24.28)	+22,508	(+3.90)	+117,747	(+20.38)
Yukon	4,535	(33.27)	+ 945	(+ 6.93)	- 120	(- .88)	+ 1,065	(+ 7.81)
Canada	2,153,297	(33.27)	0	0	0			

* It reflects the change in employment which would have taken place had the provinces grown at the national rate. The national employment grew by 33.27 percent during the period 1961-1971.

** Figures in parentheses are simply the difference of provincial growth rate less national growth rate, i.e., a "total growth rate difference". Total shift is equal to Proportionality Shift *plus* Differential Shift.

Thus, in eight of the ten provinces, as previously categorized, the proportionality shift sign is expected to be positive in the case of "have" and negative in the case of "have-not" provinces. Our results indicate that regional differences in industrial structures at the beginning of the period had an important influence on provincial differences in employment growth over the period with the exception of the anomalies in Quebec and Alberta.

In addition, Ontario and British Columbia grew more than their initial industrial mix would have suggested because they also had positive differential shifts. On the other hand, Newfoundland and, especially, Prince Edward Island had a positive differential shift offsetting the expected fall in their share of national employment. Both these provinces fared far better than the Canadian average employment growth rates in the manufacturing, construction, and service sectors. The remainder of the "have-not" provinces realized negative differential shifts, thus adding to their overall downward shift in employment growth over the period.

As remarked above, a great deal of ambiguity surrounds the interpretation of the differential shift with respect to policy implications. The proportionality shift component would indicate a need to inject fast growth industries into a depressed province in order to improve its industrial structure. On the other hand, the differential shift component, which in effect represents all other factors that might affect a province's employment growth, gives little indication for policy interpretation or direction. It was at one time accepted that a negative differential shift indicated a need for infrastructure improvement in order to thrust the province into a more competitive position vis-à-vis a more developed province. Brown [7] contends that the differential shift cannot be used to identify future strengths and weaknesses in a provincial economy; that is, it does not reflect the economic forces that many authors have ascribed to it. That argument notwithstanding, the differential shift can be useful for analytical purposes when it is used properly to signify the change in a province's industrial mix over the investigation period. This becomes apparent when it is used to determine the significance to employment growth of a province's final industrial mix, thus giving some indication of overall improvement in the province's industrial structure.

Table 3 shows the results derived by extracting the proportionality modification shift (PMS) and the residual differential shift (RDS) from the differential shift utilizing the modified shift and share standardization technique. It is precisely the PMS which reflects adjustments in a province's industrial mix. A positive PMS indicates that a province's industrial mix has improved over the investigation period, while a negative PMS indicates the opposite. However, the exact cause of the change is not explicitly indicated by this statistic.

Table 3

ANALYSIS OF DIFFERENTIAL GROWTH IN PROVINCIAL EMPLOYMENT, 1961-1971

Province	Proportionality Modification Shift (7)	As Percentage of Employment 1961	Residual Differential Shift (8)	As Percentage of Employment 1961
Newfoundland	+ 908	(+ .81)	- 66	(- .06)
Prince Edward Island	+ 1,518	(+ 4.45)	+ 330	(+ .96)
Nova Scotia	+ 3,495	(+ 1.48)	- 29,438	(- 12.43)
New Brunswick	+ 3,019	(+ 1.69)	- 11,807	(- 6.61)
Quebec	+ 5,454	(+ .31)	- 232,600	(- 13.16)
Ontario	+ 1,398	(+ .06)	+ 125,681	(+ 5.25)
Manitoba	- 262	(- .08)	- 29,456	(- 8.56)
Saskatchewan	+ 346	(+ .11)	- 19,538	(- 6.00)
Alberta	+ 3,568	(+ .73)	+ 58,638	(+ 11.97)
British Columbia	-20,357	(- 3.52)	+ 138,104	(+ 23.90)
Yukon	+ 913	(+ 6.70)	+ 152	(+ 1.11)
Canada	0		0	

All of the less developed provinces, with the exception of Manitoba, realized a positive PMS over the investigation period. Our analysis demonstrates that the industrial mix of Prince Edward Island, Newfoundland, Nova Scotia, New Brunswick, Quebec, and Saskatchewan improved between the years 1961 and 1971, indicating a potential for future gains in employment growth. The "have" provinces, Ontario, Alberta, and British Columbia, also made clear gains in employment composition and growth in the 1960s.

Table 4 presents a summary of "shifts" and classification of the provinces based on the two-shift and three-shift analysis. The full range of possibilities (or outcomes) are presented in Tables 5A and 5B. Table 4 relies on area grouping schemes developed by Boudeville [5] and Stilwell [25].

The classification of provinces by groupings (or outcomes) based on two-shift analysis suggests that groupings 1, 2, and 3 are those provinces growing faster than the national average, while groupings 4, 5, and 6 are those provinces growing slower than the national average. Again, as expected, the "have" provinces are the fast growing areas of Canada, which is consistent with past trends.

Referring to the classification of provinces based on three-shift analysis, we can determine the likelihood of future changes in employment shares given the alteration of a province's industrial mix as shown above. This classification scheme is more useful than the two-shift analysis because it helps to identify areas that have suffered declining employment shares in the past but are likely to improve in the future. Furthermore, it helps to identify areas not yet suffering but perhaps likely to do so in the future. The former provinces would fall into groupings 4, 8, 12. These provinces, P.E.I., Newfoundland, Nova Scotia, New Brunswick, Quebec, and Saskatchewan, have had a declining share of employment in the past but may well improve their situation because of the favourable change in industrial mix which they have achieved. Only one province, British Columbia, has experienced upward shifts of employment growth in the past but may have suffered a deterioration in its industrial mix which could lead to a net downward shift of employment growth in the future. British Columbia has been gaining an increasing proportion of the wood products and paper industries, both slow growth industries in the past [6:73]. For this reason, they have experienced substantial provincial growth. But now that they have captured a greater share of the market for these products, their growth could decline in the future.

Attention in the form of development area policy, including financial inducements designed to improve the industrial mix of provinces, should be focused on provinces falling into groupings 2, 6, 10, and 14. Manitoba is the only province in this category. It has

A SUMMARY OF SHIFT ANALYSIS

Province	PS	DS	TS	PMS	RDS	Net Effect	Classification of Province Based on Three-shift Analysis	Classification of Province Based on Two-shift Analysis[1]
	(Negative or Positive)							
Newfoundland	−	+	−	+	−	RDS + PS > PMS	12*	4
Prince Edward Island	−	+	−	+	+	PMS + RDS < PS	8*	4
Nova Scotia	−	−	−	+	−	RDS + PS > PMS	12*	6
New Brunswick	−	−	−	+	−	RDS + PS > PMS	12*	6
Quebec	+	−	−	+	−	PS + PMS < RDS	4*	5
Ontario	+	+	+	+	+	PS > 0;PMS>0;RDS>0	1**	1
Manitoba	−	−	−	−	−	PS<0;PMS<0;RDS<0	2*****	6
Saskatchewan	−	−	−	+	−	RDS + PS > PMS	12*	6
Alberta	−	+	+	+	+	PMS + RDS > PS	7***	3
British Columbia	+	+	+	−	+	PS + RDS > PMS	5****	1
Yukon	−	+	+	+	+	PMS + RDS > PS	7***	3

*The province in this category has featured net outward shifts in employment partly because of its initial unfavourable industrial mix, but is likely to fare rather better in future because of its improvements in that mix during the period 1961-1971.

**The province in this category has featured net inward shifts in employment, and is likely to continue to do so in the future. The initial favourable industrial mix has been maintained.

***The province (or region) in this category has featured net inward shifts in employment and is likely to continue this trend in the future. The initial unfavourable industrial mix has been improved during the period 1961-1971.

****The province in this category has featured net inward shifts in total employment but has suffered "deterioration" in its industrial mix which may lead to net outward shifts in employment in the future.

*****The province in this category has featured net outward shifts in employment and the trend is likely to continue because it has not improved its industrial mix during the period 1961-1971.

[1]Groupings 1, 2 and 3 are those provinces growing faster while groupings 4, 5 and 6 are those provinces growing slower than the national average.

featured net downward shifts in its share of employment in the past and is likely to continue to do so in the future if the trend is left unchecked.

Table 5A

CLASSIFICATION OF THE TWO-SHIFT ANALYSIS

Grouping (or Outcomes)*	
1.	Both PS and DS positive
2.	Positive PS outweighs negative DS
3.	Positive DS outweighs negative PS
4.	Positive DS outweighed by negative PS
5.	Positive PS outweighed by negative DS
6.	Both PS and DS negative

* PS = Proportionality Shift; DS = Differential Shift

Table 5B

CLASSIFICATION OF THE THREE-SHIFT ANALYSIS

Grouping (or Outcomes)*	
1.	All three effects positive
2.	All three effects negative
3.	PS and PMS positive and outweigh negative RDS
4.	PS and PMS positive but outweighed by negative RDS
5.	PS and RDS positive and outweigh negative PMS
6.	PS and RDS positive but outweighed by negative PS
7.	PMS and RDS positive and outweigh negative PS
8.	PMS and RDS positive but outweighed by negative PS
9.	PS positive and outweighs negative RDS and PMS
10.	PS positive but outweighed by negative RDS and PMS
11.	PMS positive and outweighs negative RDS and PS
12.	PMS positive but outweighed by negative RDS and PS
13.	RDS positive and outweighs negative PS and PMS
14.	RDS positive but outweighed by negative PS and PMS

*PS = Proportionality Shift; PMS = Proportionality Modification Shift; RDS = Residual Differential Shift.

Ontario, on the other hand, falling in group 1, has had strong employment growth in the past and is likely to continue this trend in the future, while Alberta, falling in group 7, appears to have had a high share of slow growth industries in the past but is now specializing more in rapid growth, energy-oriented industries. It will no doubt improve upon its position in the future.

Conclusions

Our analysis of the data within the framework of a modified Shift-Share model has enabled us to isolate (a) those provinces which

fared poorly in the past but might potentially improve their performance in the future; (b) those provinces which did well in the past but are not likely to be so fortunate in the future; and (c) those provinces which fared poorly in the past and are likely to do so in the future, all with respect to employment growth.

The findings suggest that the industrial mix of the "have-not" provinces, more specifically the Atlantic provinces, has improved during the period 1961-1971. It is, however, impossible (in this study) to determine the exact factors responsible for an apparently "favourable" change in the industrial mix of these less developed provinces.

A multitude of factors (such as "natural" evolution or market forces, discretionary regional development policy, non-governmental decision-making, gradual diffusion of technology into the less developed provinces through time) could bring about a favourable change in the industrial mix of the provinces. But, given the period under investigation, one cannot reject the possibility that a favourable change in industrial mix of the less developed provinces was the effect of regional development policy.[8] Indeed, our results would appear to support the Economic Council's own assessment of the effectiveness of Area Development programs (up to December 31, 1967). In the Fifth Annual Review [13:166-67] the Economic Council estimated that

> ...the new or expanded facilities have provided about 50,000 new job opportunities, with somewhat more than 50 percent of the total value of subsidies going to the designated areas in the Atlantic and Quebec Regions, a higher or equivalent percentage of total investment (63 percent) and estimated direct job opportunities (54 percent) have been located in economically stagnant areas in these five provinces. The program has succeeded, in an obvious sense, in achieving its narrowly defined purpose — the expansion of employment opportunities in depressed areas.

[8]It can be pointed out that since the early 1960s, and the creation of the Area Development Agency (ADA), the Agricultural and Rural Development Act (ARDA), the Atlantic Development Board (ADB), the Fund for Rural Development, and the Prairie Farm Rehabilitation Program (PFRA), the major emphasis of regional economic policy has been designed to foster regional employment and value-added by attacking the endemic structural and locational disadvantages of the provinces. The barrage of legislation in the 1960s culminating in the creation of DREE in 1969 certainly demonstrates that the federal government, in conjunction with provincial governments, has increasingly tried to reduce regional economic disparities. In short, during the reference period, regional development policy has emphasized strongly the need to develop more viable industrial structures in the less developed provinces.

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