THE ROLE OF THE FEDERAL DEFICIT IN
THE ECONOMIC GROWTH OF DEPRESSED REGIONS
A CASE STUDY OF NOVA SCOTIA, 1950-1965

by

John R. Palmer

Discussion Paper No. 74-02

Institute of Public Affairs

Dalhousie University

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INTRODUCTION

The course of industrial and economic development in the world has invariably left certain areas cut off from the mainstream of economic progress. This process has resulted in the creation of areas of depressed economic activity. Depressed regions are not, however, synonymous with declining regions. Although the economic activity of depressed regions may not provide the local population with living standards commensurate with the rest of the country, such regions can nevertheless support population growth at increasing per capita income levels. The ability of the depressed region to sustain economic growth means, of course, that such areas do not, as it were, gradually fade away; their existence can be a highly durable phenomenon.

This research examines a possible major factor which could help explain the phenomenon of the existence of a growing but persistently depressed region within a developed country. The hypothesis to be considered is that in a developed country, such as Canada, institutional mechanisms operate to halt the decline of otherwise declining regions and, further, that they can engender growth in these regions. The chief mechanism that produces this result, it is proposed, is the interaction of the central government's total spending in the region with the central government's taxation from the region. The research seeks to demonstrate that, because of its depressed status, the depressed region becomes eligible for considerable assistance from a variety of sources within the central government while per capita taxation is significantly less in the depressed region relative to other

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areas, and that this interaction provides a powerful stimulus to local economic activity.

The persistence of regional economic disparities is a feature of almost all developed countries.[1] Like other developed countries, Canada has a long history of regional problems, and the Atlantic Region in particular has formed an area of continuing depressed activity. As Brewis noted:

> Of the various regions in Canada that have experienced prolonged periods of unemployment and low incomes, the Atlantic provinces come most readily to mind. . . . for several decades the region has not participated fully in the prosperity that other parts of the country have enjoyed.[2]

Fortunately Nova Scotia, one of the four provinces that make up the Atlantic Region of Canada, has a considerable data base, which permits us to examine our hypothesis. In particular, as part of research initiated by the Agricultural Rehabilitation and Development program (ARDA), a full set of income and product accounts for the province for the years 1961 to 1964 was developed.[3] At the request of the Nova Scotia Government, the accounts were later extended to cover the period 1950-

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[1] J. G. Williamson, "Regional Inequality and the Process of National Development: A Description of the Patterns", Regional Analysis: Selected Readings, L. Needleman (ed.), Penguin Modern Economics Readings (Harmondsworth, Eng.: Penguin Books, 1968); reprinted from Economic Development and Cultural Change, Vol. 13 (1965), pp. 3-45.

[2] T. N. Brewis, Regional Economic Policies in Canada (Toronto: Macmillan Company of Canada, 1969), p. 165.

[3] Stanislaw Czamanski, Regional Income and Product Accounts of North-Eastern Nova Scotia, Regional Studies Series No. 1 (Halifax, N. S.: Institute of Public Affairs, Dalhousie University, 1968).

1965.[1] This study draws extensively on the data contained in the second

publication. These data include estimates of aggregate production and

expenditure and a complete account of money flows between the residents

of Nova Scotia and the federal government.

The analysis in the research is divided into two parts:

initially we seek to explain the factors affecting federal expenditures

in the province, relative to receipts from the province; in the second

part, the impact of this interaction on economic growth is quantified.

On the basis of the results of the analysis, policy implications are

discussed.

It should be stressed that the research examines the impact

of federal spending in the region in isolation from (a) the history of

general federal economic policies which, it could be argued, have in

part aggravated the economic misfortune of the region, and (b) the

dependence of economic activity in other regions on markets provided by

the depressed region, which, in turn, generates federal revenues.

[1] K. S. Wood, _Income and Product Accounts of Nova Scotia_
(Halifax, N. S.: Institute of Public Affairs, Dalhousie University,
1970), Statistical Appendix F, Provincial Accounts, Nova Scotia, 1950-
1965, pp. 139-49.

CHAPTER ONE

NOVA SCOTIA: DEPRESSION AND ECONOMIC GROWTH

This chapter seeks to establish first, the depressed situation
of Nova Scotia, and second, the presence of economic growth in Nova
Scotia.

The history of the growth of Nova Scotia is very similar to
that of the other Atlantic Provinces when viewed in the context of the
overall growth of Canada. It is generally recognized that the pattern
of economic growth in Canada is strongly associated with the development
of export staples.[1] Dependence on export staples provides a major
explanation for the development of different regions in Canada,[2]
including Nova Scotia.

Nova Scotia had its "golden age" in the wood-wind-sail economy
of the mid nineteenth century. This economy, which consisted primarily
of fishing, forestry, and sea transportation, was undermined by the era
of steel and steam, which encouraged the development of staples in
Western Canada, the development of Central Canada, the consequent move-
ment of factors of production away from the Atlantic Region and the

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[1] See, for example, Brewis, op. cit., p. 29. This recognition
results from the work of H. A. Innis, a summary of whose work can be
found in: W. A. Mackintosh, "Innis on Canadian Economic Development",
Journal of Political Economy, Vol. 61 (June 1953), pp. 185-94.

[2] See Douglass C. North, "Location Theory and Regional Economic
Growth", Journal of Political Economy, Vol. 63 (1955), pp. 243-58;
reprinted in Regional Development and Planning, John Friedmann and
William Alonso (eds.), (Cambridge, Mass.: The M.I.T. Press, 1964). For
a contrasting view of the impact of staples, see E. J. Chambers and D. F.
Gordon, "Primary Products and Economic Growth: An Empirical Measurement",
Journal of Political Economy, Vol. 74 (1966), pp. 315-32.

destruction of the market for wooden sailing vessels. With the rapid

expansion of Canada in the late nineteenth century and the establishment

of the transcontinental railway building period, Nova Scotia developed

small iron and coal mining industries, but these industries did not

induce the development of a manufacturing complex in the province. Both

the iron and steel industry and the coal industry have faced serious

financial problems in recent times; the former has been taken over by

the Nova Scotia government to prevent its closure, and the latter exists

largely on the basis of federal government subventions.[1]

   In addition to the role of staples, the maintenance of defence

establishments has played an important part in the growth of Nova Scotia.

The growth of Halifax, which contains approximately thirty per cent of

the population of Nova Scotia and is the cultural and commercial centre

as well as the seat of government, is related to the military history of

the region. In recent years tourism has also become a major source of

income for the province.

   Nova Scotia, like the other three Atlantic provinces, has

suffered persistent outmigration, particularly of young people, in

its modern history.[2] This outmigration is indicative of the depressed

state of the region, where general lack of employment opportunities,

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  [1] A brief summary of the economic history of Nova Scotia can
be found in Stanislaw Czamanski, <u>An Econometric Model of Nova Scotia</u>
(Halifax, N. S.: Institute of Public Affairs, Dalhousie University,
1968), pp. 1-6; or John F. Graham, <u>Fiscal Adjustment and Economic
Development: A Case Study of Nova Scotia</u> (Toronto: University of
Toronto Press, 1963), pp. 13-22.

  [2] This outmigration was reversed during World Wars I and II;
see Leroy O. Stone, <u>Migration in Canada, Regional Aspects</u>, 1961 Census
Monograph (Canada, Dominion Bureau of Statistics, Catalogue No. 99-548),
pp. 26-47.

low productivity, and low participation rates are features.[1] The combination of these characteristics has produced the remarkably stable differential in per capita income in the Atlantic Provinces relative to Canada.[2] In 1950 personal income per capita in Nova Scotia was 74.2% of that for Canada; in 1965 the proportion was virtually unchanged at 74.7%.[3]

Despite the decline or stagnation of the primary sectors in Nova Scotia, total income and production have continued to expand. Total personal income increased from $463 million in 1950 to $1,130 million in 1965, which represents an average annual growth rate of approximately 6.1%.[4] In the same period the population of Nova Scotia expanded by 19%, so that personal income per capita increased at an average annual rate of approximately 4.9% As personal income is comprised of transfer payments as well as earned income, the fact that personal income increased during this period is not sufficient evidence

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[1]An analysis of the factors explaining the depressed level of economic activity in the Atlantic region is made in: Economic Council of Canada, Second Annual Review: Towards Sustained and Balanced Economic Growth (Ottawa: Queen's Printer, 1965), Chapter 5; S. E. Chernick, Interregional Disparities in Income, Economic Council of Canada, Staff Study No. 14 (Ottawa: Queen's Printer, 1966); and F. T. Denton, An Analysis of Interregional Differences in Manpower Utilization and Earnings, Economic Council of Canada, Staff Study No. 15 (Ottawa: Queen's Printer, 1966).

[2]Economic Council of Canada, Second Annual Review, pp. 102-106.

[3]Derived from: Canada, Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1926-1956, Catalogue No. 13-502, Table 29; and Canada, Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1966, Catalogue No. 13-201 (annual), Table 29.

[4]All figures are in current dollars.

to conclude that production also expanded; the expansion of personal
income could have been solely the result of increased transfers to
persons. However, the Economic Council of Canada notes that earned per
capita income closely parallels total per capita income by province.[1]
Furthermore, estimates of Gross Regional Product for Nova Scotia
demonstrate clearly that provincial production increased during this
period, Figure 1.

We can conclude from the foregoing that the region, though
depressed, is clearly not declining. Average income per capita in Nova
Scotia has been persistently low relative to provinces in Central and
Western Canada, and the general lack of employment opportunities has
resulted in a persistent loss of labour to other parts of the country.
Nevertheless, aggregate production, income levels, and population have
increased over the period.

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[1] Economic Council of Canada, Second Annual Review, p. 113.

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Figure 1

GROSS REGIONAL PRODUCT AT MARKET PRICES
NOVA SCOTIA, 1950-1965
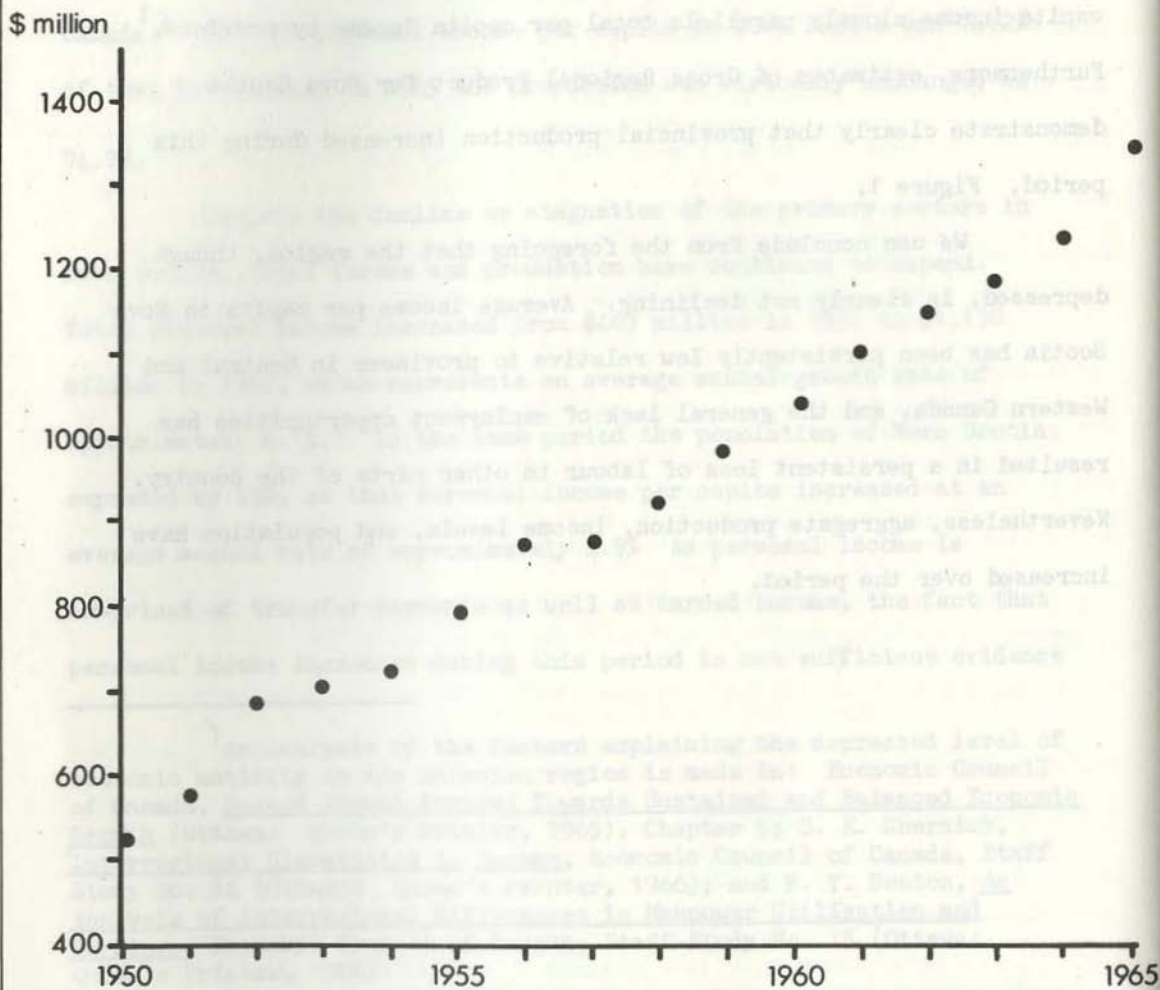
(current dollars)

Derived from: Wood, *op.cit.*, Table F-8b, p.147

CHAPTER TWO

GROWTH OF FEDERAL FLOWS IN NOVA SCOTIA

In this chapter a fairly detailed examination is made of the
growth of federal flows in Nova Scotia between the years 1950 and 1965.
The purpose of this examination is first, to substantiate the hypothesis
that the depressed region does receive a large net inflow of funds from
the federal government and secondly, to explain the reasons for this
inflow.

As the data source for the value of transactions between Nova
Scotia and the federal government is Income and Product Accounts of
Nova Scotia,[1] indication of the quality of the source is warranted. The
Nova Scotia accounts are based, with some modifications, on the accounting
framework established for the National Accounts of Canada.[2] The major
modification, and one most welcome for the purposes of regional analysis,
is the inclusion of the federal government as a separate sector, with
provincial and municipal governments combined as local government sector.[3]
The accounts show the value of all transactions between the household
sector, the business sector, the federal government sector, the local
government sector, and non-residents. In addition, estimates of Net

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[1] Wood, op. cit., Table F-3a, p. 142.

[2] Ibid, p. 3. A complete exposition of the concept and
structure of the Canadian accounts can be found in: Canada, Dominion
Bureau of Statistics, National Accounts, Income and Expenditure, 1926-
1956.

[3] In Wood, op. cit., the federal government is referred to as
Non-Local Government. In the Canadian accounts all levels of government
are consolidated to form the Government Sector.

Regional Income at factor cost, and Gross Regional Product at market prices are made, using the data obtained from the intersectoral flows. The double-entry accounting system makes for internal consistency of the statistics presented in the accounts; however, there is no guarantee that the statistics are accurate.[1]

In the ensuing analysis reference will be made to possible sources of weakness in the data. This is necessary as it is apparent from Wood's study that the quality of the statistical series is mixed; some series had to be derived by indirect methods while other series were obtained from official statistics.

The federal government makes payments to the residents of Nova Scotia via a variety of programs. The income and product accounts distinguish eight general categories. Four flows are formed by direct expenditures: the purchase of goods and services; the payment of wages and salaries; capital formation; and the payment of military pay and allowances. The remaining four flows are composed of transfer payments: to persons; to the provincial and municipal governments; to business (subsidies); and, finally, in the form of interest payments on the public debt.[2]

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[1] Some cross check on the general accuracy of the data is possible by comparing Wood's estimates with the estimates of others. Two other independent studies, Czamanski, Regional Income and Product Accounts of North-Eastern Nova Scotia; and D. B. Das Gupta, An Approach to a Social Accounting System for the Atlantic Provinces (Fredericton, N. B.: Atlantic Provinces Economic Council, 1966), have made estimates of Gross Regional Product of Nova Scotia and show very similar results: Nova Scotia Gross Regional Product, 1964, in $ million: Wood, $1,274.2; Czamanski, $1,243.0; Das Gupta, $1,298.0.

[2] Interest payments on the public debt are treated as transfers in the National Accounts.

The major part of the payments made by the residents of Nova Scotia to the federal government is composed of taxes. Certain other payments should be included, however, for a complete analysis. The complete list of payments is:

> Personal income tax
> Succession duties and estate tax[1]
> Corporate income tax
> Indirect taxes
> Interest receipts
> Profits of federal enterprises
> Transfers from the provincial government
> Employer and employee contributions to social
>   insurance and government pension plans
> Miscellaneous taxes

In 1950 total federal government expenditures in Nova Scotia are estimated to have been $135.0 million; by 1965 this figure had risen to an estimated $498.9 million. This increase in expenditures has proceeded fairly steadily throughout the time period, with an average annual growth rate of approximately 9%. The absolute level of revenues derived from Nova Scotia has been considerably less than the expenditure stream in any given year. In 1950 only $69.0 million are estimated to have been paid to the federal government; this had risen to an estimated $224.3 million by 1965. The gross flows of federal government revenues and expenditures in Nova Scotia for the period 1950 to 1965 are plotted in Figure 2, showing the growth of the deficit over the period.

The deficit spending of the federal government in Nova Scotia has clearly been substantial.[2] In any year the federal government's gross spending has been approximately double the gross receipt of funds from the province. Over the period 1950 to 1965 the federal deficit in Nova

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[1] Up to 1972.

[2] Unless otherwise stated, all estimates are from Wood, op. cit.

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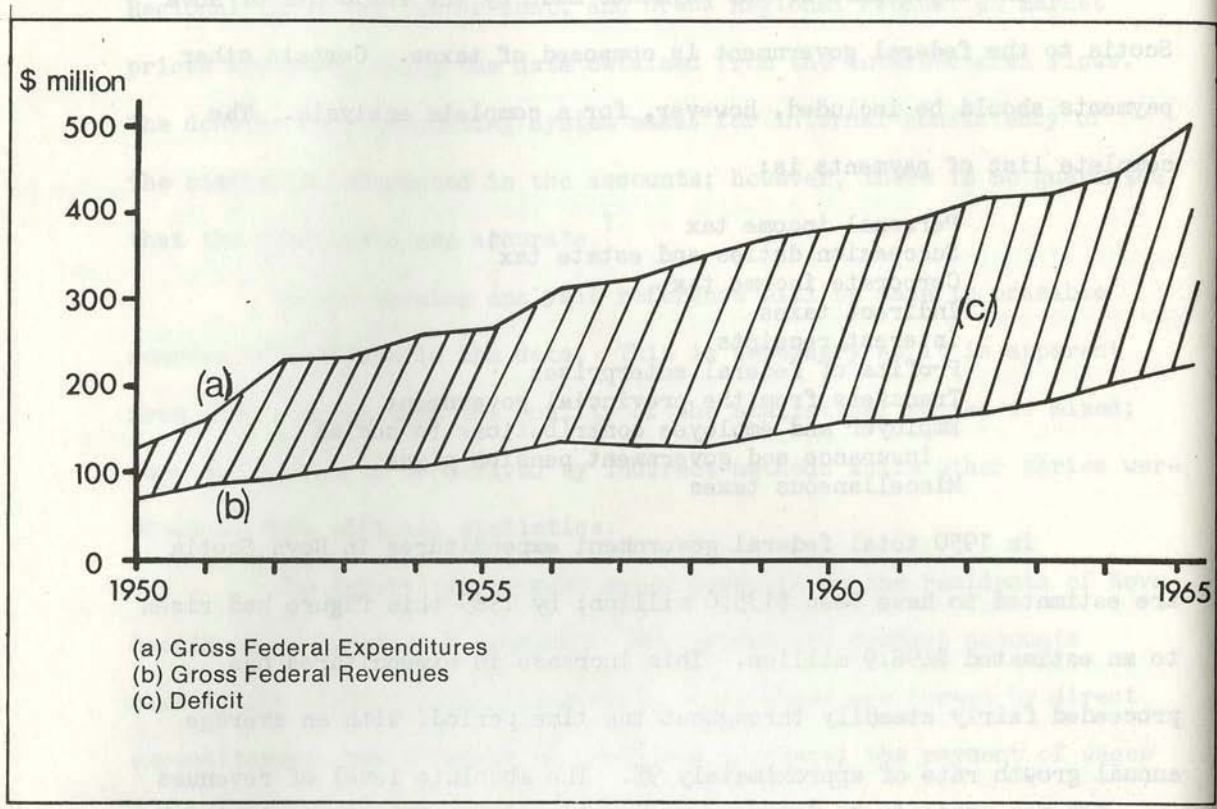
Figure 2

FEDERAL GOVERNMENT DEFICIT, NOVA SCOTIA, 1950-1965

(a) Gross Federal Expenditures
(b) Gross Federal Revenues
(c) Deficit

Scotia increased from an estimated $66.0 million to $274.6 million.

These data demonstrate that Nova Scotia has received considerable funds, net of taxes, from the federal government between the years 1950 and 1965. Before proceeding to examine the impact of this inflow of funds on the economic growth of the provincial economy, we must question the extent to which the deficit can be attributed to the depressed status of the region rather than some other factor; for example, the operation of the defence establishments. The adequacy of the data must also be investigated.

We can provide a partial answer to the first question by comparing federal government revenues and expenditures per capita for Nova Scotia and Canada for the years 1950 and 1965, Table 1. According to the national accounts figures, the federal government recorded a surplus in Canada in each of these years. In 1950 expenditures per capita in Nova Scotia were $212, while in Canada they were in the order of $164. In the same year revenues per capita were $108 in Nova Scotia compared with a figure of $210 for Canada. Thus in this year Nova Scotians received $48 more in the form of federal expenditures and paid $102 less than their Canadian counterparts. We can conclude that in this particular year the deficit of the federal government in Nova Scotia arose more from the revenue collection side of the federal operations than the expenditure side. This result immediately suggests that, given the structure of the federal tax system, the deficit at the time was more likely to be the result of factors affecting income and expenditure levels in the province, rather than other factors. Further, the three

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Table 1

FEDERAL GOVERNMENT REVENUES AND EXPENDITURES
PER CAPITA, NOVA SCOTIA AND CANADA
1950 and 1965

	1950		1965	
	Nova Scotia	Canada	Nova Scotia	Canada
Total Expenditures[a]	$211.60	$163.90	$655.60	$429.50
Direct Spending[b]	108.80	71.30	309.90	166.90
Transfers to Persons[c]	49.70	44.90	148.20	118.30
Transfers to Local Governments[d]	25.50	12.30	118.80	72.90
Subsidies	10.50	4.40	41.90	17.50
Interest Payments	17.10	31.00	36.80	53.90
Total Revenues[a]	108.20	210.30	294.70	458.50
Personal Income Tax	18.30	38.70	70.80	133.50
Corporate Income Tax	15.00	61.00	17.30	82.90
Indirect Taxes	51.40	81.30	148.10	165.90
Employer and Employee Contributions	14.10	11.60	24.60	30.80
Miscellaneous Revenue	9.20	17.60	33.90	45.40

[a] Before 1962 provincial income taxes were regarded as federal revenues and expenditures, and were classified as a transfer to provincial government. They have been deducted from these figures. Figures do not always add up, due to rounding.

[b] Consists of purchases of goods and services, military pay and allowances, wages and salaries, and capital expenditures.

[c] Excludes payments to provincial government that are subsequently paid to persons. This is unlike Wood's figures.

[d] Excludes refund of income taxes from federal government.

Source: Nova Scotia figures derived from Wood, op. cit., Table F-3b, p. 142; Table B-1, p. 95; and Table 8, p. 23. Canadian figures derived from Canada, Dominion Bureau of Statistics, National Accounts, Income and Expenditure, 1966, Catalogue No. 13-201, Government Supplementary Tables.

major sources of revenue, personal income tax, corporate income tax, and indirect taxes, clearly derive less revenue per capita in Nova Scotia than in Canada as a whole, which suggests that the deficit was the result of low incomes in the region. This pattern continues to exist in 1965. It will be examined in more detail later in this chapter.

Although in the initial year the major part of the federal deficit can be attributed to the revenue side of the federal sector, by 1965 this situation had reversed because of the dramatic increase in federal spending per capita between 1950 and 1965, Table 1. In 1965 federal spending per capita in Nova Scotia had risen to $656, compared to a Canadian per capita figure of $430. In this year federal revenues per capita in Nova Scotia were only $295, compared to a Canadian figure of $459. A large element in the increased spending was "direct spending", however, and includes expenditures on military bases, which is really a special feature of the Nova Scotia economy. If we assume that Nova Scotia received as expenditure per capita in the category "direct spending" an amount equal to the Canadian average per capita, total expenditures per capita would be reduced to $513 in Nova Scotia. At this level of spending Nova Scotians would have received an excess of $82 from the expenditure side of federal operations in 1965 compared to a payment of $164 less in taxes. The foregoing suggests that, though over this period there occurred a marked growth of expenditures, the tax differential still provided a major factor creating a federal deficit in Nova Scotia. The growth of expenditures in categories other than direct spending contributed significantly to the deficit. From Table 1 we can

see that these other expenditures are dominated by a group of transfers that, it will be shown later, are basically related to the depressed state of the province. Before the factors affecting the growth of spending and the tax differential are examined in detail, consideration must be given to the adequacy of these data.

The quality of data concerning the operations of the federal government in Nova Scotia is not entirely satisfactory. Data concerning transfer payments to persons and local governments are provided in official sources such as Public Accounts of Canada, and Provincial Government Finance.[1] Data pertaining to other expenditures (i.e., the payment of wages and salaries, military pay and allowances, the purchase of goods and services, interest payments, and transfer payments to business) are less easily acquired. Wood's estimates[2] of these series were made by piecing together available material, and thus are likely to contain errors. With respect to the revenue side of the federal account, the quality of the data is again mixed. Figures showing the collection of income taxes by province, both personal and corporate, are obtainable from official sources;[3] however, data concerning the collection of federal indirect taxes by province are not published. Wood's figures are estimated in a manner that indicates the value of indirect taxes borne by local consumers rather than the value of those taxes paid by

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[1] Canada, Department of Finance, Public Accounts of Canada (annual); and Canada, Dominion Bureau of Statistics, Provincial Government Finance, Revenue and Expenditure (annual), Catalogue No. 68-207.

[2] Wood, op. cit.

[3] Canada, Department of National Revenue, Taxation Statistics (annual).

local producers.[1] This is important to remember, as the payment of indirect taxes, calculated in this manner, forms a very large part of federal revenues in Nova Scotia, as is apparent in Table 1. Wood's method is probably the best way of allocating federal indirect taxes regionally.

The growth of expenditures by the federal government in Nova Scotia will now be examined in some detail, in order to provide us with an understanding of the mechanisms at work over the period of analysis. Figure 3 compares the composition of expenditures for 1950-52 and 1963-65. Three-year averages were used in order to offset any peculiarities for a single year. In the earlier years direct spending outweighed transfers. This pattern was reversed by the end of the period, showing that total transfers grew faster than direct spending.

Figure 3 shows that while transfers to persons formed the largest single category of expenditure in both periods the growth of federal transfers to local governments was clearly the most striking increase between the two periods.[2] The proportion of spending on

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[1] Indirect taxes are, of course, collected from producers, but for any region the value of indirect taxes embodied in goods purchased locally can be considerably different from the actual tax collection from that region. The producers in any region may not produce goods that bear indirect taxes; however, the local consumers are likely to buy goods imported into the region that embody federal indirect taxes. In a depressed region such as Nova Scotia this is particularly important, as the federal deficit permits a high level of import buying, and thus imported indirect taxation, relative to a low level of producer activities liable to pay federal indirect taxes locally.

[2] It should be pointed out that certain federal transfers to local governments that are subsequently passed on as transfers to persons are shown as transfers to persons in Wood's figures, and are not counted as transfers to local governments. Wood, op. cit., Table 18, p. 23, and Table B-1, p. 95.

1950-52

Transfers to
Persons (25.0%)

Purchases of
Goods and Services
(16.8%)

Interest
Payments (6.5%)

Wages and
Salaries (21.3%)

Transfers to
Local Governments (5.8%)

Capital
Formation (5.3%)

Subsidies (5.2%)

Military Pay
and Allowances (11.0%)

1963-65

Transfers to
Persons (27.6%)

Purchases of
Goods and Services
(9.0%)

Interest
Payments (5.8%)

Wages and
Salaries (18.0%)

Capital
Formation (4.9%)

Transfers to
Local Governments (13.1%)

Military Pay
and Allowances (15.0%)

Subsidies (6.7%)

Shaded areas indicate transfers.
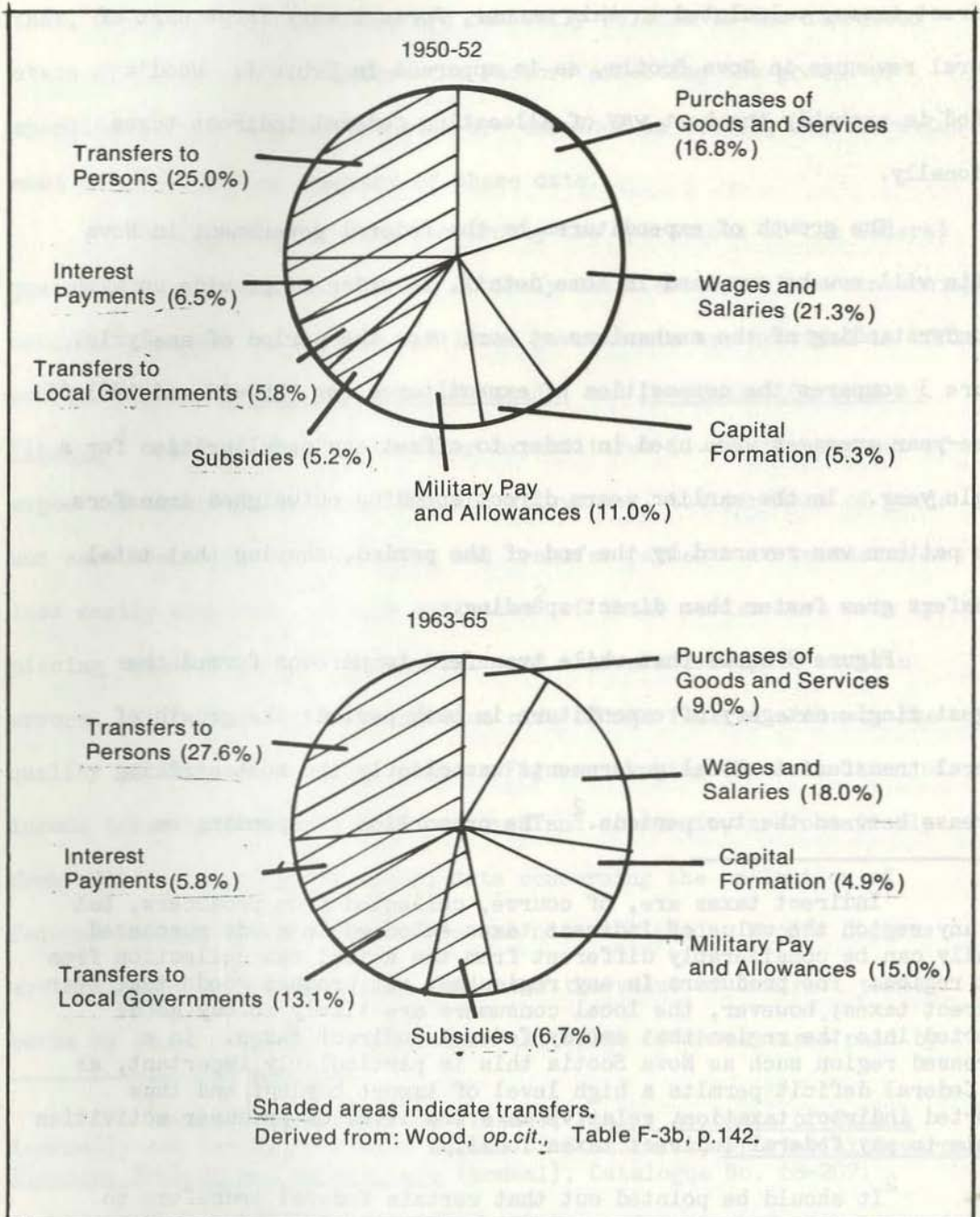Derived from: Wood, *op.cit.,* Table F-3b, p.142.

Figure 3

COMPOSITION OF FEDERAL GOVERNMENT EXPENDITURES
IN NOVA SCOTIA, 1950-52 AND 1963-65

military pay and allowances, and subsidies to business also show a marked increase in this period.

While the growth of direct spending is of importance, the growth of transfer payments is more closely related to factors affecting income levels in the region. As noted above, the largest group of federal transfers are the transfers to persons, and a complete breakdown of these transfer payments for the years 1950 to 1965 is shown in Table 2. Some of these payments were made as a part of cost-shared programs, while others were paid directly to individuals. Personal transfers to the residents of Nova Scotia increased from an estimated $39.2 million in 1950 to $135.0 million by 1965. In 1965 transfers were dominated by four programs: the old age security fund; family and youth allowances; unemployment insurance benefits; and grants to private non-commercial organizations.[1] These four programs provided 73.1% of the total personal transfers paid in Nova Scotia in 1965.

In general terms the total value of personal transfers in any year in any region is determined by (a) the number of persons in the region entitled to receive payments under a particular scheme, (b) the value of the payment per person from a particular scheme, and (c) the number of schemes in operation. If all persons in Canada in similar circumstances were entitled to the same payments, then regional differences would only arise as the proportion of recipients in any region differed from the national average. Although this applies in the case

[1] This final transfer consists basically of payments under the Hospital Insurance and Diagnostic Services Act. Hospitals are regarded as a part of the personal sector in the national and provincial accounts.

Table 2

FEDERAL GOVERNMENT TRANSFER PAYMENTS, EXCLUDING INTEREST, TO INDIVIDUALS
RESIDING IN NOVA SCOTIA, 1950-1965

(millions of dollars)

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Federal Direct Payments	31.7	32.1	52.4	55.2	58.2	59.0	61.0	73.9	88.8	86.7	91.0	95.0	100.5	102.8	108.3	112.8
Family & youth allowances	15.7	15.9	16.3	16.7	17.1	17.6	18.0	19.4	20.6	20.9	21.2	21.6	21.8	21.8	23.4	24.3
War service gratuities	--	--	.1	.1	-	-	-	-	-	-	-	-	-	-	-	-
Re-establishment credits	.9	.5	.4	.4	.3	.2	.1	.1	.1	.1	.1	.1	--	--	--	--
Rehabilitation benefits	.7	.3	.2	.1	.1	.1	--	--	.1	.1	.1	.1	.1	.1	.1	.1
Pensions, World War I & II	5.6	7.1	7.4	7.1	7.1	7.2	7.3	8.2	8.6	8.5	8.7	10.3	10.2	10.2	11.1	11.5
War veterans allowances & assistance	1.4	1.5	1.9	2.0	2.1	2.9	3.1	3.7	4.3	4.4	4.8	6.0	6.7	7.1	8.2	9.4
Unemployment insurance benefits	5.3	4.4	6.4	9.7	11.7	10.4	11.1	17.2	23.4	20.4	23.6	23.0	21.3	19.2	17.8	16.2
Pensions to government employees	.7	.7	.8	.9	1.0	1.2	1.4	1.6	1.8	1.9	2.2	2.3	2.5	2.7	3.0	3.3
Old age security fund payments	...	...	17.3	17.7	18.2	18.4	18.7	23.0	26.8	27.0	27.6	28.9	33.8	37.1	40.4	42.1
Grants to universities	...	.3	.3	.3	.3	.3	1.0	.7	1.1	1.1	1.1	1.1	1.5	1.5	1.5	1.5
Miscellaneous	1.4	1.4	1.3	.2	.3	.7	.3	-	2.0	2.3	1.6	1.6	2.6	3.1	2.8	4.4
Federal Share of Federal-Provincial Programs	7.5	6.6	2.1	2.3	2.5	2.9	2.7	2.4	4.0	9.1	12.7	14.7	16.5	16.9	20.1	22.2
Old age assistance	6.6	5.1	.9	1.0	1.0	1.0	1.0	1.3	1.6	1.6	1.6	1.6	2.0	2.1	2.3	2.2
Blind persons allowances	.3	.3	.3	.3	.2	.3	.3	.5	.4	.4	.4	.4	.5	.5	.5	.5
Disabled persons allowances	...	...	...	...	--	.3	.3	.5	.7	.8	.8	.9	1.1	1.2	1.4	1.5
Unemployment assistance	...	...	...	...	...	...	...	--	.3	.7	1.6	1.7	1.6	1.8	1.9	1.9
Vocational training	--	--	--	--	--	.1	.1	.1	.1	.1	.1	.1	.3	.3	.4	.5
Grants to private non-commercial organizations	.6	1.2	.9	1.0	1.3	1.2	1.0	.2	.9	5.5	8.2	10.1	11.0	10.9	13.6	15.6
TOTAL	39.2	38.7	54.5	57.5	60.7	61.9	73.0	76.3	92.8	95.8	103.7	109.7	117.1	119.6	128.4	135.0

Source: Wood, op. cit., Table B-1, p. 95.

of personal transfers paid directly by the federal government, such as
family allowances, payments made jointly with the provincial governments
via cost-sharing arrangements distort this straightforward approach
slightly.[1]

It is clear from Table 2 that a large part of personal transfer
payments are formed by war pensions, old age security fund payments,
and family and youth allowances. The disproportionately large receipt
of such payments in Nova Scotia compared to other areas will clearly be
related to the demographic features of the region. Payments of war
pensions, veterans allowances, and old age security funds per capita in
1965 totalled approximately $83 in Nova Scotia and $60 in Canada, while
family and youth allowances per capita were $32 in Nova Scotia and $31
in Canada in the same year.[2] We know that depressed regions have a
disproportionately large number of dependents, largely as a result of
the high rates of outmigration of people in the 20-34 years age group.[3]
This is undoubtedly a major cause of the high level of transfer payments
made by the federal government to Nova Scotia. Unemployment insurance
forms a further large transfer receipt for the region; in 1965 the per
capita receipt was $21 in Nova Scotia and $16 in Canada. Again we can
attribute this to a feature of depressed regions, namely the high rates

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[1]For example, under the federal hospital insurance scheme high
cost provinces receive a lower percentage of total hospital costs than
do lower cost provinces. See The National Finances, 1966-67 (Toronto:
Canadian Tax Foundation, 1966), pp. 96-97.

[2]Nova Scotia estimates based on Table 2; Canadian estimates
based on Department of National Health and Welfare statistics in:
Canada, Department of Finance, Public Accounts of Canada, 1965.

[3]Economic Council of Canada, Second Annual Review, Table 5-7,
p. 115, shows the distribution of population in the depressed provinces
of Canada.

of unemployment that are characteristic of regions such as Nova Scotia.[1]

Over time, an increase in any one of the three factors (a), (b), and (c) will cause total transfer payments to expand. From Table 1 it is apparent that transfer payments per capita increased in Canada as well as in Nova Scotia. Thus the increased level of transfer spending that occurred throughout Canada permitted Nova Scotia, as a depressed province, to derive considerable benefits. This means that the increased receipt of transfer payments from the federal government can only be partially explained by an increase in the number of transfer recipients. It would clearly be of considerable interest to pursue further the factors affecting the relative contributions to the growth of transfers of each of the three factors (a), (b), and (c), but this will be left for future research.

It was noted, Figure 3, that federal transfers to local governments in Nova Scotia showed considerable growth over the period 1950-1965. Their composition, including federal transfers to persons which are handled by the provincial government through cost-shared programs, is presented in Table 3, and shows that the value of total transfers to local governments increased from $15.0 million in 1950 to $90.4 million in 1965.

The largest component of these transfers is the payments to the provincial government under Federal-Provincial Equalization and Stabilization Agreements and Statutory Subsidies. Included in these payments is the Atlantic Provinces Adjustment Grant. In 1965 the sum of these payments accounted for 55% of total federal transfers to local

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[1]Brewis, op. cit., presents in Table 8:4 a comparison of unemployment rates.

Table 3

COMPOSITION OF FEDERAL TRANSFERS TO LOCAL GOVERNMENTS
IN NOVA SCOTIA, 1952-1965[a]

(millions of dollars)

	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Total transfers excluding tax rentals	15.0	17.8	20.0	19.5	21.7	30.4	40.9	54.4	56.9	58.2	67.2	70.1	80.3	90.4
Federal-Provincial Equalization & Stabilization Agreements	10.8	11.8	13.5	11.8	13.2	17.7	18.6	22.0	21.1	20.4	23.3	21.3	30.0	37.2
Statutory subsidies	2.1	2.1	2.1	2.1	2.1	2.1	9.6	9.6	9.6	9.6	12.6	12.6	12.6	12.6
Transfers to persons via local governments from cost-shared programs	2.1	2.3	2.5	2.9	2.7	2.4	4.0	9.1	12.7	14.7	16.5	16.9	20.1	22.2
Other payments to local governments via cost-shared programs	1.0	1.6	1.9	2.7	3.7	8.2	8.7	13.7	13.5	13.5	14.8	19.3	17.6	18.4

[a]The remittance of taxes to the provincial government by the federal government is subtracted from these estimates, using Wood's estimates of tax collections.

Source: Wood, op. cit., Table 8, p. 23; and Canada, Dominion Bureau of Statistics, Provincial Government Finance (annual).

governments. Throughout the period of analysis these transfers were based on various equalization formulae which were established to accommodate competing provincial interests.[1] The general principle applied in estimating these payments is to raise the tax yield of all the provincial income taxes to a standard rate for Canada. The actual procedure used for calculating these sums is extremely complicated, but the general result of the application of these formulae is to compensate the poorer provinces for their lower tax bases.[2]

The Canadian federal-provincial financial arrangements have their counterparts in most countries with multi-dimensional governmental structures. For example, in a centrally oriented governmental system such as that of the United Kingdom we find complex financial arrangements which attempt to offset to some extent the cost of government at the local level. Similarly, at the municipal level in Canada there are further support schemes operated by the provincial government to assist municipalities.

From Table 3 it can be seen that the fastest growing part of the transfer of funds to local governments has been cost-shared programs rather than payments from the federal-provincial financial agreements. In 1952 these programs accounted for only 21% of the total transfers to local governments; by 1965 they contributed 45%. The largest element of these transfer payments consists of payments under the Hospital Insurance

[1] The complex history of the Equalization and Stabilization payments is catalogued in: Graham, op. cit., pp. 31-41.

[2] A discussion of the method by which the repayments are estimated is made in: T. N. Brewis et al., Canadian Economic Policy (Rev. ed.; Toronto: Macmillan Company of Canada, 1965), p. 294.

and Diagnostic Services Act, which has been in operation since 1959. The rest of these transfers are paid to the province via a variety of schemes such as health grants, vocational training assistance, winter works programs, grants to municipalities, highway construction grants, and forestry improvement grants. Many of these schemes are likely to be of particular benefit to the poorer provinces; e.g., training of unemployed, assistance under the Agricultural Rehabilitation and Development Act, unemployment assistance, and old age assistance.

The fact that money is available to the poorer provinces that are able to participate in these schemes has clearly induced a large additional inflow of federal funds into Nova Scotia. Even if the province had received, per capita, no more from these schemes than had richer provinces (although from Table 1 it is apparent that this has not been the case) in aggregate this money represents an inflow of funds that simply would not have taken place in the absence of these programs. Thus, even if the shared-cost programs were not in any way designed to be of any particular benefit to the depressed provinces, given that the tax system is in no way related to the distribution of federal expenditures, these provinces would still gain financially from the increased federal interest in local affairs.

The final category of federal transfers of particular interest to a depressed region is subsidies to business. In Figure 3 it can be seen that in Nova Scotia these transfers have been growing in proportion to total federal transfers. Their composition is shown in Table 4. The total receipt of subsidies increased from $6.7 million to $31.9 million

Table 4

FEDERAL GOVERNMENT SUBSIDIES PAID TO BUSINESS IN NOVA SCOTIA, 1950-1965

(thousands of dollars)

Year	Agriculture Assistance	Coal Subventions	Steamship Subventions	Vessel Construction Assistance	Maritime Freight Rate Subsidies	Water Transport Subsidies	Fisheries Subsidies	Total
1950	147	1,822	418	–	4,238	–	100	6,725
1951	174	3,665	411	–	4,714	–	159	9,123
1952	1,083	5,215	397	–	4,660	–	218	11,572
1953	680	7,500	397	–	4,926	–	163	13,666
1954	754	9,026	371	–	4,950	–	124	15,225
1955	252	8,952	394	–	5,162	–	385	15,145
1956	219	7,477	323	–	5,856	304	512	14,692
1957	209	7,201	330	–	5,907	278	562	14,487
1958	464	9,454	547	–	6,049	203	508	17,226
1959	1,461	14,355	588	–	6,988	194	439	24,025
1960	983	14,662	532	–	6,470	151	480	23,278
1961	566	15,210	611	–	5,738	110	387	22,622
1962	1,510	16,892	631	1,029	6,080	194	474	26,810
1963	2,615	16,208	606	3,504	6,032	217	449	29,631
1964	1,319	18,353	734	2,955	7,015	96	608	31,080
1965	1,337	18,208	622	3,937	6,323	–	1,511	31,937

Source: Wood, op. cit., Table 18, p. 41.

in the study period. The table indicates the massive inflow of federal

subsidies into Nova Scotia in the form of coal subventions and Maritime

Freight Rate payments. Various other payments are received to support

agriculture, fisheries, and steamship lines.[1] Here the proportion of

industries requiring support from the federal government is directly

related to the depressed state of the region.

Table 5 gives a complete list of federal transfers to the

province of Nova Scotia in 1964. The list shows in detail the variety

of programs from which the depressed province in a developed country

such as Canada is likely to derive considerable benefit.[2]

Next we examine the composition of the flow of revenue from

the province to the federal government. In Figure 4 the composition of

revenues paid to the federal government by residents of Nova Scotia is

depicted. The most striking feature of the structure of the revenue

flows from Nova Scotia is the extent to which indirect taxes dominate

all other flows. In 1965 indirect taxes in Nova Scotia were valued

at an estimated $112.7 million and represented 50.2% of the total

federal revenues derived from Nova Scotia residents; by comparison,

indirect taxes in Canada in 1965 provided only 36.2% of total federal

revenue.[3]

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[1] Some of these payments are not formally regarded as subsidies.

[2] One source of funds not included in this analysis is the value
of federal enterprises showing losses in depressed regions. Wood's
accounts indicate a profit for federal enterprises in the province, which
is surprising in view of the huge losses of Canadian National Railways
and the Canadian Broadcasting Corporation in Canada as a whole.

[3] Derived from: Canada, Dominion Bureau of Statistics, National
Accounts, Income and Expenditure, 1965, Catalogue No. 13-201 (annual),
Table 36.

Table 5

FEDERAL GOVERNMENT TRANSFERS TO NOVA SCOTIA, EXCLUDING INTEREST, 1964

(millions of dollars)

Federal Transfers to Persons:		Federal Transfers to Local Government (other than above)	60.2
Direct	108.3	Federal-Provincial financial arrangements	30.0
Family & youth allowances	23.4	Share of income tax on power utilities	0.7
Re-establishment credits	--	Statutory subsidies	12.6
Rehabilitation benefits	.1	Trans-Canada Highway	4.7
Pensions, World War I & II	11.1	Roads to resources	0.5
War veterans allowances & assistance	8.2	Hospital insurance	2.3
Unemployment insurance benefits	17.8	Hospital construction	0.9
Pensions to government employees	3.0	General health grants	1.7
Old age security fund payments	40.4	Education assistance	2.0
Grants to universities	1.5	Construction of fishing vessels	0.3
Miscellaneous	2.8	Forestry improvement	0.2
		Agricultural lime assistance	0.3
Via Shared-Cost Programs	20.1	Civil defence	0.2
		Winter works	0.1
Old age assistance	2.3	Grants to municipalities	3.5
Blind persons allowances	0.5		
Disabled persons allowances	1.4	Federal Subsidies to Business	31.1
Unemployment assistance	1.9		
Vocational training	0.4	Agriculture assistance	1.3
Grants to private institutions	13.6	Coal subventions	18.4
		Steamship subventions	0.7
		Vessel construction assistance	3.0
		Maritime freight rate subsidies	7.0
		Water transport subsidies	0.1
		Fisheries subsidies	0.6
TOTAL			219.7

Source: Wood, op. cit., Table B-1, p. 95, and Table 18, p. 41; and Canada, Dominion Bureau of Statistics, Canada Year Book, 1967, Catalogue No. 11-205, Table 5, pp. 1036-1037.

1950-52

Employer and Employee Contributions to Social Insurance and Government Pension Plans (10.5%)

Transfers from Local Governments
Profits of Federal Enterprises
Interest Revenue
Miscellaneous
Succession Duties and Estate Taxes
8.7%

Indirect Taxes (46.1%)

Personal Income Tax (17.4%)

Corporate Income Tax (17.3%)

1963-65

Transfers from Local Governments
Profits of Federal Enterprises
Interest Revenue
Miscellaneous
Succession Duties and Estate Taxes
11.6%

Employer and Employee Contributions to Social Insurance and Government Pension Plans (8.9%)

Personal Income Tax (23.5%)

Corporate Income Tax (6.3%)

Indirect Taxes (49.7%)

Derived from: Wood, *op.cit.*, Table F-3a, p.142.

Figure 4

COMPOSITION OF FEDERAL GOVERNMENT REVENUES FROM
NOVA SCOTIA RESIDENTS, 1950-52 AND 1963-65

Federal government taxes are levied at uniform rates throughout the nation. Tax payments from any given area are determined by (a) the number of taxpayers liable for a given tax at a given rate, (b) the tax rate applicable to each taxpayer, and (c) the number of types of taxes levied. Differing tax revenues per capita from a region will reflect several factors. In the case of indirect taxes, low tax payments per capita reflect low per capita expenditures of the residents of the region.[1] On the other hand, personal income tax payments reflect not just average incomes but rather the distribution of income in the area. Low per capita corporate tax payments are a reflection of the lack of business profits.

The major sources of revenue in Canada are personal income tax and indirect taxes. In 1965 the indirect tax payment per capita in Nova Scotia was $148; in Canada the figure was $166, 12% more than the Nova Scotia payment, Table 1. This differential is caused by the different expenditure levels per capita in Nova Scotia relative to Canada, which in turn reflect the low average incomes in the province.

As a progressive tax, the incidence of the personal income tax in any region is necessarily related to the distribution of income in that region. Taxation Statistics provides data that permit one to derive rough estimates of income distribution by province. In 1964, 13% of total income in Canada was received by persons earning less than $3,000; in Nova Scotia, 18% of total income was earned by this group.

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[1]Note that Wood's figures for indirect tax payments are based on the proportion of retail sales in Nova Scotia relative to Canada; see Wood, op. cit., p. 31, and Table 14, p. 33.

At the other extreme, whereas in Nova Scotia 12.6% of total income was earned by persons receiving over $10,000 in 1964, in Ontario 17.3% was earned by individuals in this group.[1] Unless a few extremely wealthy people live in the depressed region, the average per capita payment of personal income taxes is likely to be significantly less than the national average in such areas. In 1965, the payment of personal income tax per capita in Nova Scotia is estimated to have been only $70.80; in Canada the comparable figure for this year was $133.50, a difference of about 47%, Table 1. Clearly the personal income tax had a far lower incidence in Nova Scotia than in Canada and, furthermore, had a lower incidence in Nova Scotia than indirect taxes.

From Table 1 we can see that in Canada revenues from personal income tax increased far more between 1950 and 1965 than did other revenues. In 1950, 18% of federal revenues were raised by personal income tax in Canada; this increased to 29% in 1965. The increase in the personal income tax levy is reflected in the change in proportion of payments to the federal government made by Nova Scotia residents, Figure 4.

The growth of personal income tax relative to indirect forms of taxation will clearly be of advantage to the poorer provinces because this will induce proportionately lower tax payments to flow from them to the federal government.

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[1] Canada, Department of National Revenue, Taxation Statistics, 1966. (annual), Tables 2 and 8. These estimates understate low-income groups who do not pay income taxes.

We have shown that Nova Scotia, as a depressed region, receives a large net flow of funds from the federal government. The reasons for this inflow can be found both in the excess of expenditures, measured on a per capita basis, that occur in depressed provinces, and in the fact that less revenue is paid in taxation to the federal authorities by depressed regions, relative to other areas. Over the period of analysis there occurred a significant increase in expenditures in Nova Scotia. A part of this increase was the result of increased direct expenditures which are related to the military base, and as such were regarded as extraneous to the analysis. The growth of transfer payments, however, provided the chief explanation for the increased expenditures. This growth resulted from several factors, but mainly (1) growth of various equalization payments to the province, (2) growth of transfers to persons, (3) increased interest of the federal government in cost-shared programs, and (4) growth of subsidies to business.

Depressed provinces can expect to receive a larger share of these federal transfers relative to other areas for several reasons. Distorted population structure, low incomes and expenditures per capita, high unemployment rate, and businesses requiring assistance combine to cause a large inflow of funds into the depressed region. If these factors worsen, the depressed province is likely to find the federal institutional mechanisms automatically providing increased expenditures. Over the period of analysis the growth of federal programs throughout Canada provided perhaps the major impetus to the growth of flows into Nova Scotia. We did not attempt to differentiate expansion of

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expenditures that resulted from changing policy instruments compared to expansion resulting from changing regional variables. For a more complete analysis than is attempted here, this would be useful.

The national tax structure has important implications for the net flow of funds into a depressed region. Low average incomes result in less indirect tax payments per capita; more important, the progressive income tax clearly benefits low income regions. We can deduce that the growth of the importance of the federal income tax compared to indirect taxation in the period of analysis was of considerable benefit to Nova Scotia.

We can conclude that over the period 1950-1965 the federal government expanded its spending in various schemes, particularly transfers of all kinds, that were beneficial to the poorer provinces. At the same time the tax system underwent changes which also benefited poorer provinces. The net result of these two forces was to induce a large and growing deficit of the federal government in Nova Scotia. Furthermore, a large part of the net flow of funds into the depressed region was not the result of measures designed expressly to assist poorer areas. Thus, even if a country pursues no explicit regional policy to aid these depressed regions, one can expect powerful automatic forces to be at work to support them.

CHAPTER THREE

THE IMPACT OF FEDERAL FLOWS ON THE ECONOMIC
GROWTH OF NOVA SCOTIA

In order to identify the influence of the growth of federal spending on regional economic growth our initial task is to formulate a model of economic growth for the region. The open nature of regions[1] and the freedom of movement of factors of production between regions suggest that regional growth is highly dependent on external factors.[2] The essence of theories of regional development that stress the role of external factors is that regions, developing on the basis of locational advantage, specialize in the production of certain products which are marketed either within the nation or internationally. In Nova Scotia these basic industries include forestry, fishing, and mining. Other industries that develop in the region, such as retail stores, transportation, and localized manufacturing, depend upon the development of a local market, which could not exist without the exporting sectors.

The economic base theory is a simplified model of regional growth based on this idea.[3] In this theory the region is divided into

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[1]Openness is intended to mean a high ratio of trade to aggregate production.

[2]See, for example, Harvey S. Perloff with Vera W. Dodds, _How A Region Grows: Area Development in the U. S. Economy_, Supplementary Paper No. 17 (New York: Committee for Economic Development, 1963), pp. 34-36; or North, "Location Theory and Regional Economic Growth", pp. 249

[3]A useful summary of economic base theories can be found in Richard T. Pratt, _Economic Base and Multiplier Approaches to Regional Income Generation_, D.B.A. dissertation, Indiana University, Graduate School of Business (Ann Arbor, Mich.: University Microfilms, 1966).

two parts: the basic sector, which consists of the export industries; and the service sector, which consists of those industries that serve the locally generated market. Given an assumption of the stability of the basic-service ratio, the economic base theory provides a determined theory of regional growth; it simply posits that total employment is a constant proportion of basic employment.[1] This theory is an extreme oversimplification, but the approach has been used successfully for regional analysis.[2]

The theory can be critized in several ways. The assumption that the major force promoting regional growth lies in the export sector is not to be taken lightly. Over time the ability of the service sectors to grow and support the basic industries may be the most important dynamic factor; the service sectors may begin exporting; or the base multiplier may change because, for example, the region may begin to substitute local production for imports. Also, in its simplified form the economic base approach is weakened by the use of employment variables instead of money flows.

Charles Tiebout at one time suggested that, though in the short run such factors as, for example, residential construction may be as important as exports, "over the longer time span only the export sectors

[1] See, for example, Walter Isard and Stan Czamanski, "Techniques for Estimating Local and Regional Multiplier Effects of Changes in the Level of Major Governmental Programs", Papers, Peace Research Society (International), Vol. 3 (1965), pp. 20-21.

[2] See, for example A. S. Harvey, The Export Base of the Pictou County Economy (Halifax, N. S.: Institute of Public Affairs, Dalhousie University, 1968), Chapter II.

appear as basic."[1] In his formulation, income growth was dependent upon

the following equation:

$$\frac{\text{Increase}}{\text{in Income}} = \frac{\text{Increase in}}{\text{Export Income}} \quad \frac{1}{1 - \left(\begin{array}{l}\text{Propensity to}\\\text{consume locally}\\\text{x income}\\\text{created per}\\\text{dollar of local}\\\text{consumption}\\\text{sales}\end{array}\right) - \left(\begin{array}{l}\text{Propensity to}\\\text{invest locally}\\\text{x income}\\\text{created per}\\\text{dollar of local}\\\text{investment}\\\text{sales}\end{array}\right)}$$

Commenting on North's generalized theory of regional development, however,

Tiebout claimed that exports could not provide a complete explanation of

regional growth, stating that "the concept of the export base is merely

one aspect of a general theory of short-run regional income determination.

In the case of large regions, other variables may play as important a role

as exports."[3] North's reply to Tiebout restated his contention that

export industries have played the major role in regional development,

though he added that federal government expenditures can also "serve and

have served as a cause of regional expansion."[4]

There are several shortcomings in the pure export approach to

regional development. First, other sources of external funds can provide

a vital injection into the regional economy. This research seeks to

demonstrate that one of these sources, federal spending, can be a major

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[1] Charles M. Tiebout, The Community Economic Base Study,
Supplementary Paper No. 16 (New York: Committee for Economic Development,
1962), p. 74.

[2] Ibid., p. 61.

[3] Charles M. Tiebout, "Exports and Regional Economic Growth",
Journal of Political Economy, Vol. 64 (April 1956), p. 164.

[4] Douglass C. North, "A Reply", Journal of Political Economy,
Vol. 64 (April 1956), p. 166. It should be noted that changes in the base
multiplier and non-economic migration were also cited.

factor promoting growth in depressed regions; also investment expenditures can induce a local expansion.[1] A second shortcoming is the lack of identification of supply factors; technological change, education, transportation, labour supply, and capital supply are considered passive factors.

We have developed an export-federal government oriented income generation model, which ignores both the possible multiplier-accelerator interaction of investment expenditures and supply factors. The assumptions adopted are similar to North's; in the long term investment activity is dependent on regional growth.[2] The model is designed to embody the total value of federal flows and exports as exogenous variables in a model of local income generation.

It must be recognized that "behind" the model is the vast array of supply factors which are not explicit in the formulation of the model. It should not be thought that these factors are considered unimportant because of their omission, but for the hypothesis being explored their inclusion is not necessary.

Given the equality of gross regional expenditure and gross regional product in equilibrium, we can write,

$$Y = C + I + G_f + G_l + X - M \tag{1}$$

where ·

Y = gross regional product at market prices

C = total consumption

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[1] A lagged multiplier-accelerator can operate at the regional level; see L. M. Hartman and D. Seckler, "Towards the Application of Dynamic Growth Theory to Regions", <u>Regional Economics: Theory and Practice</u>, David L. McKee, Robert D. Dean and William H. Leahy (eds.) (New York: The Free Press, 1970), pp. 81-89.

[2] North, "A Reply", p. 166.

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I = business investment

G_f = federal government spending on goods and services

G_l = local governments spending on goods and services

X = value of exports (including tourism and interest and dividends from businesses outside the province)

M = value of imports (including spending abroad and the payment of interest and dividends to non-residents).[1]

Gross regional product includes only income derived from production; thus transfer income is not embodied in it. G_f includes only direct spending of the federal government, again not including transfers. In order to incorporate transfer spending of the federal government into the model, transfers are divided into two parts: direct transfer payments to persons plus subsidies to business, and transfer payments to local governments. Transfers to local governments are either spent locally as direct expenditures or are passed on to businesses or persons as further transfers.

With respect to taxation, the federal government receives money from the province largely in the form of income taxes or indirect taxes. For simplification, all taxes will be treated alike. Let,

R_f = federal transfers to persons and firms in the province

R_g = federal transfers to local government in the province

R_l = local government transfers in the province

T_f = federal government taxes from the province

T_l = local government taxes

[1] We are able to use national accounting identities at the regional level because of the ability to use data in Wood, op. cit. Compare this model with other regional models where X generally refers to value added in export oriented industries; for example, G. Sirkin, "The Theory of the Regional Economic Base", The Review of Economics and Statistics, Vol. 41, No. 4 (1959), pp. 426-28.

Thus,

$$T = T_f + T_1 \qquad (2)$$

$$R = R_1 + R_f \qquad (3)$$

where

T = total taxes paid in the province

R = total transfer payments made to persons and business.

In the model federal government spending and taxation and export earnings are regarded as exogenously determined, while all other components of spending are endogenous.[1] Consumption is a simple function of earned income plus transfers minus taxes; imports are assumed to be a constant proportion of gross regional product; local government transfers are assumed dependent upon federal transfers to the local government;[2] local taxes are a function of local income; business investment is a simple function of income. We have,

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[1]Note that all federal flows are regarded as exogenous in the model. In Chapter Two it became apparent that these federal flows are not truly exogenous to a fully generalized model of economic growth in a depressed province. The model that is developed here seeks only to establish a statistical relationship between exports, federal flows, and growth of income and is not intended to represent a fully developed model of the sort that is implied by the analysis of the previous chapter. For example, unemployment insurance or federal taxation could be endogenous terms. This simplification arises from our desire to develop a measure of the impact on economic growth of the net federal spending that occurred during this period, rather than a predictive model based on fully developed instrument variables.

[2]This assumption permits us to divide federal transfers to local government between federal payments that are passed on by the local government to others as transfers and those that are spent directly by the local government as a part of G_1. Thus $(f \cdot R_g)$ is that part of federal transfers passed on by the local government and $(1 - f)R_g$ is that part that is spent on direct expenditures by the local government, see equation (10), p. 40. Note that though Wood included certain federal transfers that pass through the provincial government as direct federal transfer payments, there are other transfer payments that must be considered, see footnote 2, p. 17.

$$C = a + c(Y + R - T) \tag{4}$$

$$M = m \cdot Y \tag{5}$$

$$R_1 = f \cdot R_g \tag{6}$$

$$T_1 = t \cdot Y \tag{7}$$

$$I = b + i \cdot Y \tag{8}$$

$$T_f = \overline{T_f}$$

$$R_g = \overline{R_g}$$

$$R_f = \overline{R_f}$$

$$X = \overline{X}$$

$$G_f = \overline{G_f}$$

The approach of the analysis is to reduce the equations to a single equation showing income as a function of X and net federal spending, which is composed of R_g, T_f, R_f, and G_f.

Assuming the local government maintains a balanced budget[1], we can write,

$$T_1 + R_g = R_1 + G_1 \tag{9}$$

thus,

$$G_1 = T_1 + R_g - R_1$$

and from (6) and (7)

$$G_1 = t \cdot Y + (1 - f)R_g \tag{10}$$

Substituting (2), (3), (6), and (7) in (4),

$$C = c (Y + R_1 + R_f - T_1 - T_f) + a \tag{11}$$

$$= c (Y + f \cdot R_g + R_f - t \cdot Y - T_f) + a \tag{12}$$

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[1]The local government pursues no active fiscal policy; in any year the local government's revenues and expenditures may differ slightly, but this is ignored for simplification.

Substituting (8), (12), (10) and (5) in (1),

$$Y = c(Y + f \cdot R_g + R_f - t \cdot Y - T_f) + i \cdot Y + G_f +$$
$$t \cdot Y + (1 - f)R_g + X - m \cdot Y + a + b \quad (13)$$

Collecting terms in (13) we get,

$$Y = Y(c - ct + i + t - m) + c(f \cdot R_g + R_f - T_f) +$$
$$G_f + (1 - f)R_g + X + a + b \quad (14)$$

Thus,

$$Y = \frac{c(f \cdot R_g + R_f - T_f) + G_f + (1 - f)R_g + X + a + b}{(1 - c + ct - t - i + m)} \quad (15)$$

Equation (15) is the reduced form of the model, showing income generation solely in terms of the exogenous variables, federal flows, and exports.

Let,

$$K = \frac{1}{(1 - c + ct - t - i + m)} \quad 1/ \quad (16)$$

and let,

$$G_T = c(f \cdot R_g + R_f - T_f) \quad (17)$$

and,

$$G_F = G_f + (1 - f)R_g \quad (18)$$

Equation (15) can now be represented as

$$Y = K(G_T + G_F + X + a + b) \quad (19)$$

K is, of course, the income multiplier, which depends upon (c) the propensity to consume, (i) the propensity to invest, and (m) the propensity to import. By assuming that K is constant over time we can extend the static income generation model to a growth model.

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[1] The term $(ct - t)$ stems from equation (9), which embodies the local government balanced budget assumption, and equations (6) and (7). $1/(ct - t)$ is the local government balanced budget multiplier. As $c < 1$, $(ct - t) < 0$; it has therefore an expansionary influence on Y.

From (19)

$$Y = K (G_T + G_F) + K \cdot X + K (a + b) \tag{20}$$

Given that a and b are constants, we can write

$$\Delta Y = K (\Delta G_T + \Delta G_F) + K \Delta X \tag{21}$$

where ΔY, ΔX, ΔG_T, and ΔG_F represent the change of each variable over time. In the model, growth of income is dependent on the growth of federal spending, net of taxes, and the growth of export earnings multiplied by the constant K.[1]

Let,

$$G_c = \frac{K (\Delta G_T + \Delta G_F)}{\Delta Y} \tag{22}$$

Substituting (21) into (22)

$$G_c = \frac{K (\Delta G_T + \Delta G_F)}{K (\Delta G_T + \Delta G_F) + K \Delta X}$$

$$= \frac{\Delta G_T + \Delta G_F}{\Delta G_T + \Delta G_F + \Delta X} \quad [2] \tag{23}$$

G_c is the measure of the contribution of the federal government to economic growth. The next step is to find the value of G_c in Nova Scotia and examine the parameter K.

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[1] One weakness in this model is the lack of identification of differential multiplier effects of government spending versus export earnings. A priori the author suspects these to have little impact on the results of this analysis given the generally weak interindustry linkages in the province, indicated by the Atlantic Region Input-Output Tables. This aspect of the study is, however, worthy of further examination.

[2] A basically similar, but less rigorous approach to the measurement of the impact of government flows on regional growth was used by Roger E. Bolton in Defence Purchases and Regional Growth, Studies of Government Finance (Washington, D. C.: The Brookings Institution, 1966), Chapter IV.

A minor problem arises in attempting to estimate values for G_c because in order to determine values for G_T we must first determine the value of the parameter (c), as can be seen from (17). G_T in effect represents the sum of federal transfers made to households and business that, unlike direct spending, do not directly form production and from which total taxation of the federal government is subtracted, multiplied by (c). Our analysis seeks only to show the influence of the federal flows on the long-term growth of the province; thus our parameters are long-term parameters. We will therefore assume that (c) is the mean of the average propensity to consume in Nova Scotia over the period.[1] In Table 6 data for the estimation of (c) are shown. The influence of (c) in the derivation of G_c is in fact slight as, throughout the period of analysis, values for G_T are swamped by values for G_F.

In Figure 5 we have plotted the values of X and $(G_T + G_F)$ by year. This diagram indicates that over the period of study the value of federal spending, net of taxation, clearly formed a major source of funds to the provincial economy in relation to the injection of exports. In fact, as the diagram shows, in the years 1958 and 1959 $(G_T + G_F)$ exceeded X. This means that in these two years more local production was generated from the inflow of federal government funds than was generated from export earnings. Two periods are discernible from the diagram. In the first, stretching from 1950 to 1959, $(G_T + G_F)$ grew faster than exports;

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[1] The constancy of the C/Y ratio in the long term is of course a well known phenomenon. See, for example: Michael K. Evans, _Macroeconomic Activity, Theory, Forecasting, and Control: An Econometric Approach_ (New York: Harper and Row, 1969), p. 15. The constant term (a) is zero by this approach.

Table 6

ESTIMATION OF 'c', 1950-1965

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
Y ($ million)	526.4	583.2	682.0	698.4	719.8	789.3	869.6	872.0	914.1	976.3	1035.8	1093.5	1145.8	1184.1	1274.2	1378.3
Y + Tr - Tx (S million)	468.8	506.0	608.1	605.3	636.3	693.9	760.4	761.7	814.4	888.6	923.4	986.5	1034.5	1069.5	1139.7	1235.5
C ($ million)	431.6	445.0	494.1	525.4	559.0	585.9	616.0	656.0	683.3	738.0	761.8	800.9	828.5	864.9	930.7	988.6
$\dfrac{C}{Y + R - T} = c$	0.92	0.88	0.81	0.87	0.88	0.84	0.81	0.86	0.84	0.83	0.82	0.81	0.80	0.81	0.82	0.80

Mean of c = 0.8375

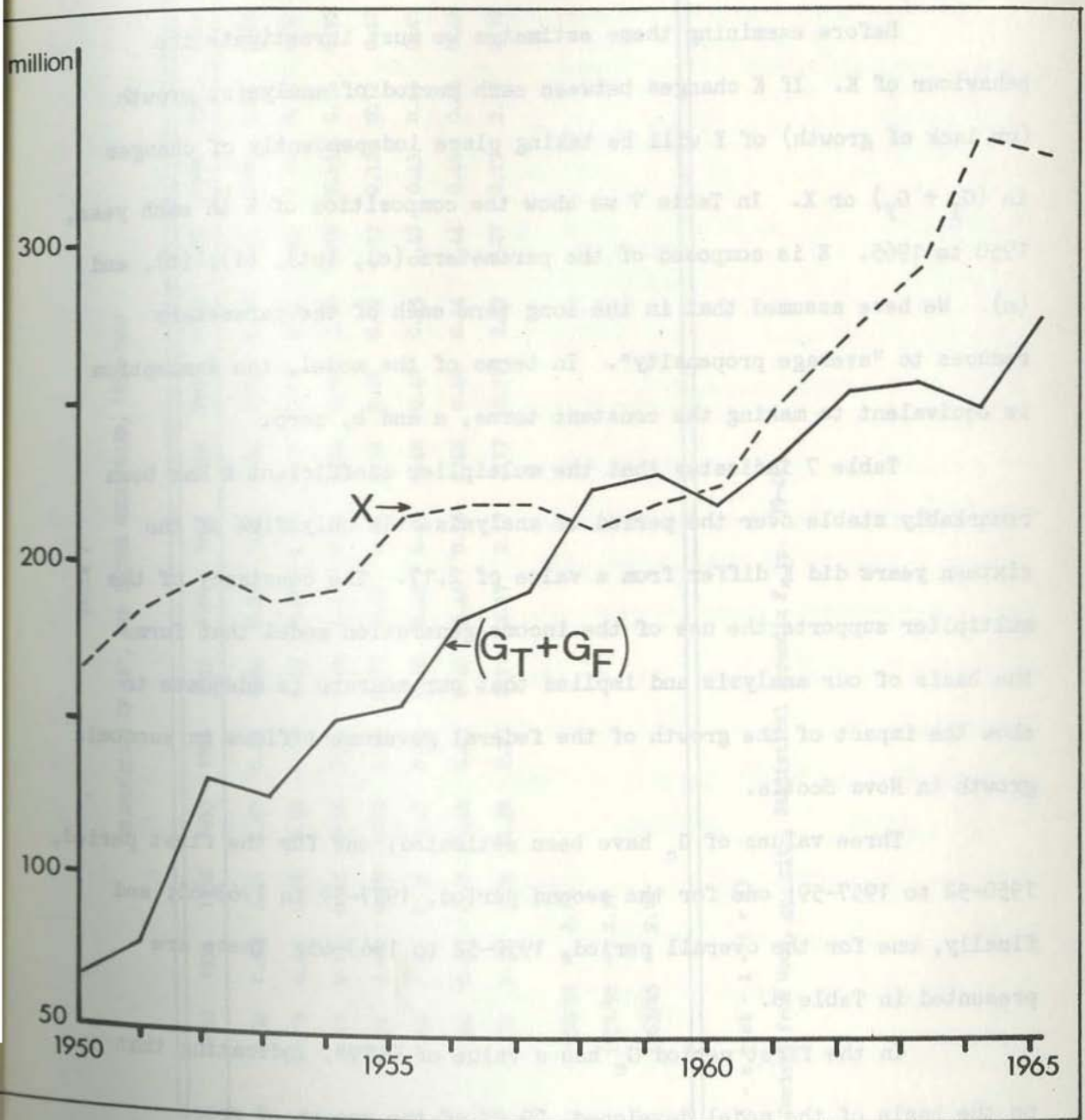Standard Deviation = 0.0351

Coefficient of Variation = 4.193%

Figure 5

COMPARISON OF VALUES OF X AND $(G_T + G_F)$
NOVA SCOTIA, 1950-1965

however, in the second period, 1960 to 1965, export activity expanded more rapidly than the inflow of federal funds net of taxes.

Before examining these estimates we must investigate the behaviour of K. If K changes between each period of analysis, growth (or lack of growth) of Y will be taking place independently of changes in $(G_T + G_F)$ or X. In Table 7 we show the composition of K in each year, 1950 to 1965. K is composed of the parameters (c), (ct), (i), (t), and (m). We have assumed that in the long term each of the parameters reduces to "average propensity". In terms of the model, the assumption is equivalent to making the constant terms, a and b, zero.

Table 7 indicates that the multiplier coefficient K has been remarkably stable over the period of analysis. In only five of the sixteen years did K differ from a value of 2.17. The constancy of the multiplier supports the use of the income generation model that forms the basis of our analysis and implies that our measure is adequate to show the impact of the growth of the federal government flows on economic growth in Nova Scotia.

Three values of G_c have been estimated: one for the first period, 1950-52 to 1957-59; one for the second period, 1957-59 to 1963-65; and finally, one for the overall period, 1950-52 to 1963-65. These are presented in Table 8.

In the first period G_c has a value of 0.796, indicating that on the basis of the model developed, 79.6% of the growth of gross regional product in Nova Scotia between these years can be attributed to the stimulus provided by the growth of the federal deficit in the

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Table 7

EXAMINATION OF 'K', THE INCOME MULTIPLIER, 1950-1965

	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965
c	0.92	0.88	0.81	0.87	0.88	0.84	0.81	0.86	0.84	0.83	0.82	0.81	0.80	0.81	0.82	0.80
ct	0.10	0.09	0.07	0.10	0.09	0.08	0.08	0.09	0.10	0.09	0.10	0.10	0.10	0.10	0.10	0.09
i	0.17	0.17	0.14	0.16	0.15	0.16	0.16	0.15	0.14	0.16	0.17	0.16	0.15	0.16	0.17	0.17
t	0.11	0.10	0.09	0.12	0.10	0.10	0.10	0.11	0.12	0.11	0.12	0.12	0.12	0.12	0.12	0.11
m	0.54	0.52	0.45	0.47	0.50	0.48	0.45	0.49	0.46	0.47	0.45	0.43	0.43	0.45	0.47	0.45
$\frac{1}{K}$*	0.44	0.46	0.48	0.42	0.46	0.46	0.46	0.46	0.46	0.46	0.44	0.44	0.46	0.46	0.46	0.46
K	2.27	2.17	2.08	2.38	2.17	2.17	2.17	2.17	2.17	2.17	2.27	2.27	2.17	2.17	2.17	2.17

Mean of K: 1950/52 = 2.17

1957/59 = 2.17

1963/65 = 2.17

* $\frac{1}{K}$ = $(1 - c + ct - i - t + m)$

Source: Derived from Wood, op. cit., Statistical Appendix F, pp. 139-49.

The major growth factor at work in these years was the rapid expansion

of exports. Gross regional product increased by $358.1 million in the

period, or approximately 5.6% per year. Exports expanded by $104.7

million, while federal flows expanded by only $47.5 million.[1] Thus

of the 5.6% per year increase of gross regional product, only 1.8% is

attributable to the increased federal flow, and the remaining 3.8% can

be found in the expansion of exports. It is evident that the federal

deficit still provided a significant stimulus to provincial production

in this period.

Over the whole period 1950-52 to 1963-65 the value of G_c is

estimated to have been 0.553. Thus over half the growth of total pro-

duction that occurred can be identified as being a result of the

stimulus provided the economy by the expansion of federal spending, net

of taxes, that took place in Nova Scotia.

The analysis demonstrates that in Nova Scotia federal spending

flowing into the province contributed significantly to the growth of the

gross regional product of the province. In Chapter Two we showed that

the depressed state of the province is a major factor promoting the

growth of the federal deficit in the province. We can deduce from these

observations that powerful institutional mechanisms were at work in

Canada between 1950 and 1965 to support the growth of depressed regions.

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[1] Much of the expansion of exports appears to come from a marked
increase in value of fish exports in the period; see Wood, op. cit.,
Table D-1, p. 123.

CHAPTER FOUR

CONCLUSIONS AND POLICY IMPLICATIONS

Over the period 1950 to 1965 Nova Scotia received a massive
and growing injection of funds from the federal government. The deficit
of the federal government in the province was the result of two forces;
on the one hand, greater expenditures per capita were made by the federal
government in Nova Scotia compared to Canada as a whole, while on the
other, lower taxes per capita were collected. A part of the deficit is
attributable to the operation of defence establishments in the province;
however, the major part was found to be related to factors arising from
the depressed nature of the province. Furthermore, during the period under
study the federal deficit in Nova Scotia underwent very rapid growth.

In an examination of the impact of this deficit upon the
economic growth of the province an income-generation model was formulated
to test the contribution of the federal government to the not inconsider-
able growth of gross regional product that occurred in the period 1950
to 1965. The conclusion of this analysis was that in the period 1950 to
1959 the growth of the federal deficit formed the major stimulus to
the growth that took place in Nova Scotia. In the second period, 1960 to
1965, the deficit still contributed to the growth of regional production,
although it declined in significance. The general conclusion that could
be made from the analysis is that the economic growth of depressed
regions is supported by federal deficit spending in these areas.

The existence of depressed regions in developed countries has caused the governments of these countries to pursue various policies to aid such areas. It was apparent from the discussion of Chapter Two that certain transfers are made to the depressed provinces of Canada explicitly to support the tax revenue of the provincial governments. The major emphasis of regional policy in recent years, however, has been towards the implementation of programs that will enable the depressed regions to sustain economic development and thus eliminate, or at least reduce, the dependency upon transfers that at present exists.[1] The model explicitly ignores supply factors which development programs have emphasized; thus the analysis that has been undertaken cannot be utilized to consider the full impact of the federal government's development efforts. Nevertheless, as both the expenditure and taxation functions of the federal government clearly have a considerable impact on the economic growth of depressed regions, the implications of this analysis should be of significance to the policy maker concerned with regional development.

Several factors were in operation to induce the large inflow of federal funds into the province of Nova Scotia in the period of analysis. As a depressed province Nova Scotia was able to receive larger than average per capita expenditures from the federal government, and to make a less than average per capita payment of taxes. Over the period, federal government spending increased considerably throughout

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[1] For a description of these programs in Canada see: Brewis, op. cit., pp. 95-223; for countries of Western Europe see: U. S. Department of Commerce, Area Redevelopment Administration, Area Development Policies in Britain and the Countries of the Common Market (Washington, D. C.: Government Printing Office, 1965).

Canada, particularly in the areas of health, education, and welfare; this was a major factor in the large increase in the gross spending of the federal government in Nova Scotia. At the same time, the federal government increased its dependence on the personal income tax; this subtracted further from potential revenues from the province. Thus policies that affect the growth of federal spending, the type of federal spending, and the incidence of taxation will have differing regional implications.[1]

The major policy implication emerging from the analysis is that the economies of depressed regions are heavily dependent upon all policies that affect federal tax and expenditure programs. Whereas a prosperous economy, such as Ontario, would only be influenced marginally by the net tax-expenditure flows of the federal government in the province, a depressed province, such as Nova Scotia, is likely to be highly sensitive to any changes in the net flow of federal government funds.[2]

The corollary of this first implication is that depressed regions are likely to be less sensitive to changes in export earning activity than are other regions. It is possible to have a situation in which export activity is non-existent and thus the local economy would be sheltered from external market forces operating on their products.

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[1]Of course, all federal spending and taxing policies have some locational implications; see Edgar M. Hoover, The Location of Economic Activity (New York: McGraw-Hill, 1948), p. 252.

[2]The value of G_c is probably quite low for a province such as Ontario.

The basic ground for pursuing regional development in the depressed regions of Canada has been the desire to reduce per capita income differentials in Canada and to reduce unemployment in these regions.[1] In particular, development programs have been proposed as a more constructive alternative to the continuing dependence of the Maritimes on transfers.[2] However, the desire to reduce dependence upon transfers should not obscure two factors. Firstly, only part of the transfers that are paid to the depressed regions are composed of payments explicitly made to support the depressed area. Although the federal government pays sums via Equalization Agreements, Statutory Subsidies, Stabilization Payments, and the Atlantic Adjustment Grant, other federal transfers have contributed more than these sums in recent years. These other federal transfers are likely to be of more benefit to lagging areas than to other areas simply because of the features of the depressed areas and the nature of the transfers. Also the receipt of transfers is only one aspect of the dependence of the poorer regions on the federal government. As we have shown, the federal government receives less tax revenue per capita from the depressed areas compared to other areas. Again, this is not the result of deliberate regional policies but stems from the nature of the federal tax system and the features of the areas, so that any general program of expenditure by the federal government is

[1] Brewis, op. cit., pp. 79-94.

[2] An exposition of the alternative means of reducing income differentials is made by F. T. Walton, The Formulation of Regional Economic Objectives, paper based on research at University of Glasgow, 1965-1967 (mimeographed), p. 9. Walton notes that there are basically two ways of reducing income differentials; either by transfer spending, or by increasing earned income in the poorer provinces.

likely to lead to a deficit in the depressed areas. Thus we can conclude that only a part of the receipt of transfers can be regarded as a "welfare" payment explicitly made to sustain regional per capita incomes.

The second factor to be considered is that the receipt of transfers by residents of the province, although not itself a part of regional product, has clearly provided a major stimulus to the growth of the local economy. As the analysis of the previous chapter indicated, only massive economic development in the depressed regions will enable these areas to support present living standards while eliminating the need for deficit spending by the central government in these regions. In conclusion, the analysis undertaken lends support to the hypothesis that the decline of depressed regions in developed countries is likely to be offset by the fiscal power of the central government and that, further, this instrument can stimulate growth in such regions.

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