

THE
ECONOMIC BASE
OF THE
HALIFAX
METROPOLITAN
AREA

— and —
SOME IMPLICATIONS
OF
RECENT POPULATION
FORECASTS



By
ALASDAIR M. SINCLAIR
Assistant Professor of Economics
Dalhousie University

THE INSTITUTE OF PUBLIC AFFAIRS
DALHOUSIE UNIVERSITY
HALIFAX, CANADA

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FOREWORD: PURPOSE AND ORIGIN OF THE STUDY

Guy Henson

Director
Institute of Public Affairs
Dalhousie University

The Economic Situation of the Halifax-Dartmouth Area

The Halifax Metropolitan Area¹ is unusual among cities in its origins and in the reasons for its growth. Despite a strategic location, the area has lacked proximity to great sources of raw materials and to large assured markets. Its growth has been responsive, and vulnerable, to the changing requirements of defence and the armed forces. It has been affected by fluctuations in international trade and by changes in national policy that have influenced its use as a port. Wholesale and retail distribution, manufacturing (especially ship-building and repair), and governmental and institutional services (education in particular) have been important to the area. However, the basic sources of livelihood of its citizens, and of its collective livelihood as a community, have hitherto not been adequately described or understood.

For purposes of private and public planning, an analysis of these basic sources of livelihood of any large urban community is necessary for a full understanding of its situation, its problems, and its probable lines of development. This is true of the Halifax Metropolitan area in particular. The Greater Halifax-Dartmouth

1. The Census term designating the Greater Halifax-Dartmouth area

area forms one economic and social unit, which is united (rather than divided) by its original and prime reason for being, its great natural harbour. What are the industries or occupations which sustain this community now approaching 200,000 in population? What is the size of each such sustaining industry or occupation? Which industries or occupations are growing, which declining, which static? What, in the aggregate, is their composite character? Do they complement and reinforce each other? Towards what possibilities of future development do they point? How do they relate to the external requirements of the province and region, of the nation, and of the world? What economic shifts and trends now visible are likely to influence them separately or as a whole? In the light of knowledge yielded by answers to questions of this kind, change, both expected and unexpected, can be better appraised as it occurs, or as soon after its occurrence as it can be identified and measured.

Necessity of Economic Base Studies

The necessity of this kind of analysis is attested by the Committee for Economic Development (CED), the reputable body of 180 leading businessmen and educators whose Trustees are generally presidents and board chairmen of corporations and presidents of universities in the United States. In July 1960, after three years of study of urban problems by a special committee and staff, the CED issued a report entitled Guiding Metropolitan Growth.²

The Committee for Economic Development recommended "careful

2. Guiding Metropolitan Growth: A statement of National Policy by the Research and Policy Committee of the Committee for Economic Development. New York City, 1960

studies of the economic base" as the first of several types of necessary action.

The following section of the CED report is worth quoting here:

"The heart of our problem is the use of land and of other economic resources, particularly public revenue resources, in our metropolitan areas in the most efficient manner. The use of these resources almost always involves choices among alternatives. ...

"The Committee recommends four types of action which should lead to the making of better decisions about the use of land, public revenue, time and human effort in our metropolitan areas.

1. Careful Studies of the Economic Base

"The Committee believes it important to bear in mind that a metropolitan community is a place for earning a livelihood. The existence of any urban area at a particular place, and its growth or decline, depend on the expansion or contraction of opportunities for employment and investment. If this is understood, a community will usually desire to take the governmental steps which can help maintain and increase such opportunities. Growth or change in employment and private investment may also call for changes in land-use patterns, expansion of highway or other transportation systems, and development of utilities such as water and sewers. The attendant population growth will influence school requirements and other public services.

"A fundamental step in meeting the problems of a metropolitan area, then, is systematic and periodic analysis of its economic base. Many areas could benefit from a careful analysis of the economic and demographic forces influencing the volume and pattern of its income-generating activities. Such knowledge is essential to an understanding of the influence of public policy on the retention, expansion or attraction of private investment and employment opportunities. Only with such knowledge is it possible to formulate sound master plans to guide community development, to invest wisely in public improvements, and to make the right decisions about urban renewal. Such knowledge is of great value to business men making investment and location decisions within a metropolitan area. In a private enterprise economy an improvement in private economic decisions adds to the public welfare.

"Such base studies should cover the entire region and should be carried out on a nonpartisan and objective basis by official planning and development agencies with metropolitan-wide jurisdiction."

The present study was in fact well under way by the time the CED report appeared. It grew out of the relationships of the Institute of Public Affairs, Dalhousie University, with the efforts of both officials and citizens in the Halifax-Dartmouth area in recent years to examine such problems as urban decay and suburban sprawl and to plan for urban renewal and efficient land use.

Origin of Present Study

A first look into economic factors affecting Halifax City was taken by the Institute, under commission from Professor Gordon Stephenson, in preparing Volume II of his Redevelopment Study of Halifax, Nova Scotia, 1957. The significance of economic factors was further pursued by the Institute in its association with the Committee on Problems of Growth and Development of the Greater Halifax-Dartmouth Area (the "Regional Study Committee"), which was set up in April 1959 by the Halifax Board of Trade and the Halifax Branch of the Community Planning Association of Canada in conjunction with the Institute. (The "Regional Study Committee" recommended the establishment of an area-wide regional planning commission in its Submission of February 22, 1960, to the Province and to the three Municipal Governments.) After the "Halifax-1980 Conference" of January 1960, which was sponsored by the Mayor of Halifax City with the cooperation of the Dalhousie Institute of Public Affairs, the Mayor appointed the Citizens' Planning Committee of Halifax, to which the Institute Director was consultant. The present investigation was initiated under the stimulus of the work of that Committee, and with the encouragement of its Chairman, Brigadier V. deB. Oland, and of A. I. Barrow, Chairman

of the "Regional Study Committee". This study is directed toward the interests of the Greater Halifax-Dartmouth area as a whole no less than toward the interests of its parts.

The Present Study, and the Future

Population forecasting and economic prediction are at best hazardous undertakings; yet, today as perhaps never before, both private and public bodies must reckon with the future. We have become a "future-oriented" society. Efforts are being made and must be made in many quarters to anticipate growth and development along many lines. More and more persons and agencies have to prepare to meet one or more probable alternatives and have to be able to adapt to future situations which cannot be predicted with exactness and which must be dealt with as they arise. In short, private enterprise and governments tend increasingly to regard planning as a major task.

In making ready for the future, a natural tendency of all of us is to think of it as a continuation of the known conditions of the recent past, taken as ten, twenty, or even thirty years. History has indicated that, particularly in the case of Halifax in view of its partial reliance on defence expenditures, the future may prove to be quite different from the recent past.

Mechanical projections of recent trends of population growth are evidence of a kind, and they ought to be taken into account. They are of limited value, however, and may be misleading and dangerous unless their limitations are recognized by those who use them.

Used in conjunction with this projective approach, the qualitative and quantitative analysis of the kind carried out in this study provides a much improved background of knowledge for urban and regional planning. Here the economic base is determined and divided into its parts. Each of these parts - defence, distribution, manufacturing, health, government, and so on - can eventually be further analyzed. At a given time, one can then define and understand far more intelligently the changes taking place in these parts and in the whole as a result of general economic trends and of special regional, national, and international influences.

Needless to say, the present analysis will be even more meaningful when another layer of change can be added after publication of the 1961 decennial census figures. In future, each new statistical layer will bring a deeper understanding of the processes of growth and change in the economic base of the Halifax Metropolitan Area.

Urban economic base study has a major value quite apart from its local uses, public and private. The Royal Commission on Canada's Economic Prospects has pointed to the growing urbanization of Canada and the anticipated predominance by 1980 of 16 Metropolitan areas, of which the Halifax area is one. With the increased attention being given to planning by business and industry (and especially by large units of the private sector), as well as by national and provincial governments, the analysis of the economic base of the large urban areas is likely to have much significance for regional planning of a provincial and inter-provincial nature (as for the Atlantic Provinces) and for national economic projections.

Little of this kind of economic analysis has been undertaken in this country up to the present. To the best of our knowledge, this may be the first of its kind in Canada. The proponents of the method used would not claim perfection or finality for it. For these reasons, and pending the addition of 1961 data, the Dalhousie Institute of Public Affairs offers this as a useful initial study. In doing so, the Institute invites criticism and suggestions from professional as well as other serious readers with a view to refining the technique³ and in order to increase its value when the 1961 census data can be incorporated.

Authorship and Acknowledgments

This study was made under the direction of Professor A. L. Neal, Research Associate of the Dalhousie Institute of Public Affairs, who was particularly concerned with the method and the general design. A. M. Sinclair, now Assistant Professor of Economics, Dalhousie University, made the investigation and wrote the Report. A Dalhousie graduate who had completed three years as a Rhodes Scholar at Oxford, Professor Sinclair did this work during his tenure of a further two-year Fellowship at Harvard.

3. "The Committee believes that this field of inquiry deserves a larger commitment of research and educational resources. The preparation of economic base studies is currently handicapped by a lack of skilled technicians. Systematic procedures for collecting meaningful data about the metropolitan economy are also lacking. These are matters of national importance and should be brought to the attention of the public through a national advisory body." - The Committee for Economic Development, in Guiding Metropolitan Growth.

The Dalhousie Institute of Public Affairs wishes to record its appreciation of grants made toward costs of the study and of encouragement received from the City of Halifax, the City of Dartmouth and the Municipality of the County of Halifax.

The interest and advice of a number of persons should be acknowledged, and in particular of Dr. John F. Graham, Head of the Department of Economics, Dalhousie University; John E. Lloyd, C.A., Mayor of Halifax City, in his capacity of Chairman of the Dalhousie Municipal Consulting Committee, a body advisory to the Institute of Public Affairs and representing municipal organizations; Dr. F. F. Clairmonte, Department of Economics, Dalhousie University; and Mr. Barrow and Brigadier Oland, to whom reference has already been made.

- Guy Henson -

November 1961

S U M M A R Y

This study of the Metropolitan Halifax Area has two purposes: (1) to identify the "economic base" of the area and (2) to discuss the implications of the population forecasts which have been made for the area. The main conclusions of the report are:

The economic base of Metropolitan Halifax is defined as that part of the area which produces goods and services for sale to other areas, or public bodies located outside Metropolitan Halifax. These exporting activities are called the economic base of the area. They have provided and will provide the major stimulus to the growth and income growth of the area, and because they also determine the size and the profitability of the non-basic or "local" sector of the economy.

Employment data for 1951 are used (1) to identify the major exporting industries in the area and (2) to determine the actual number of jobs for each of these export industries who are engaged in producing for export rather than for local sale. For example, while the Health Services are considered to be a basic or exporting industry, it is shown that not all of its sales are to non-residents of the Metropolitan Area. It is calculated that only 40% of the industry is engaged in producing "export sales", the remaining 60% being accounted for by the sales to the area. Similar calculations are made for all the major industries in the area.

Summary

This study of the Metropolitan Halifax Area has two purposes:-

(1) to identify the "economic base" of the area and (2) to discuss some of the implications of the population forecasts which have been made for Metropolitan Halifax. The main conclusions of the report are summarized here.

Part I The Economic Base of Metropolitan Halifax

In this study the "economic base" is defined as that part of the local economy which produces goods and services for sale to individuals, firms, or public bodies located outside Metropolitan Halifax. These exporting industries are called the economic base of the area because they have provided and will provide the major stimulus to the population and income growth of the area, and because they also determine the size and the profitability of the non-basic or "local-servicing" sector of the economy.

Employment data for 1951 are used (1) to identify the export industries of the area and (2) to determine the actual number of workers in each of these export industries who are engaged in producing for export rather than for local sale. For example, while the Health Services "industry" is seen to be a basic or exporting industry, it is obvious that not all of its sales are to non-residents of the Metropolitan Area: in fact, it is calculated that only 48% of the industry is engaged in earning "export dollars", the remaining 52% being accounted for by the residents of the area. Similar calculations are made for all the industries of the area.

In 1951 there were 55,510 persons in the labour force of Metropolitan Halifax. It is calculated that 24,851 or approximately 45% of these persons were engaged in producing goods and services for sale outside the Metropolitan Area.

These 24,851 persons therefore constituted the economic base of the area in 1951. By individual employment sectors, it was found that Defence Services alone accounted for 41% of the economic base of the Metropolitan Area. Defence Services was followed by Wholesale Trade (10%), Retail Trade (9%), Health Services (6%), Transportation and Storage (6%) and Shipbuilding and Repair (5%). These six industries accounted for 77% of the economic base; smaller percentages were contributed by Other Government Services, Confectionery, Canned and Cured Fish, Finance and Insurance, Education and other activities. (See Table 1)

To forecast the specific output and employment patterns of each of these basic industries for, say, the next 20 years, would require extensive technological and market analysis beyond the scope of the study. However, some general observations are made concerning the more important elements of the economic base. (1) Defence - Technological innovations may result in a larger proportion of the national defence budget being spent on improved equipment rather than on manpower. If so, this would have an adverse impact on the local economy. However, increased local purchases by defence establishments might be a partial off-set. (2) Manufacturing - Manufacturing is an important element of the economic base of Metropolitan Halifax. An analysis of recent investment figures shows that the area is just holding its own

in relation to the rest of Canada with respect to manufacturing.

- 3) Transportation - It is concluded: (1) the St. Lawrence Seaway is unlikely to have an adverse impact on the Port of Halifax and
- (2) that the Halifax International Airport will not necessarily be an important stimulus to growth in the area.

While it is not possible to foresee a spectacular development in any of the major basic industries of the area, a high rate of growth in per capita income in Canada as a whole would probably ensure a steady growth in demand for the output of such local industries as wholesale and retail trade, transportation, health services, financial services, confectionery, petroleum products and aircraft and parts.

Part II Population Forecasts

In the period from 1931 to 1956 the population of the Halifax area increased 2.4 times as fast as that of Nova Scotia and 1.7 times as fast as that of Canada, owing to the large net inflow of labour to the area. A recent study by Canadian-British Engineering Consultants estimates that the population of Metropolitan Halifax will reach 300,000 by 1980. This amounts to a percentage increase 2.8 times that predicted for the Atlantic Provinces and 1.4 times that predicted for Canada for the period 1959 to 1980.

If the population of Metropolitan Halifax is to reach 300,000 by 1980, all sectors of the economy, except manufacturing, will have to increase at the rates predicted for the various sectors of the national economy. Manufacturing will have to increase at an even faster rate: in fact, one and one-half times as fast. Furthermore, some change in the relationship between basic and service industries will be necessary. This could take place in any of three ways. (1) Some of the industries which made up the economic base in 1951 would have to export a greater

percentage of their output in 1980 than in 1951. (2) By 1980, a given number of export workers would have to support more workers in the service industries. (3) A third possibility is that by 1980 new basic industries would be developed in the Metropolitan Area. Before one could predict with confidence a population of 300,000 for Metropolitan Halifax by 1980, it would be necessary to show (1) that the assumptions concerning the rate of growth of Metropolitan Halifax vis-a-vis Canada were justified, and (2) that one or more of the structural changes outlined in this paragraph were likely to take place.

3. The Method Employed

The term "economic base" is sometimes used to refer to the sum total of the resources in an economic system. In this report the term is used in a more limited and technical sense: The economic base is that part of the economy which produces goods, services and capital for sale to individuals or firms located outside the area. Industries which export goods, services or capital beyond the boundaries of Metropolitan Halifax are to be considered "basic industries". Industries which do not export goods, services or capital beyond these boundaries -- that is to say, industries whose activities are restricted to supplying

The Economic Base of the Halifax Metropolitan Area

and

Some Implications of Recent Population Forecasts

The main purpose of this study is to identify the "economic base" of the Halifax Metropolitan Area. Apart from providing an understanding of its economic history, a study of the economic base should be useful in forecasting and planning the growth and development of the Metropolitan Area. For example, an economic base study should help in assessing future trends in the growth of per capita income, the future composition of the labour force, the growth of population and the general economic stability of the area. In this particular study, main emphasis is placed on identifying and describing the economic base of the Metropolitan Area, but in Part II there is a short discussion of the implications of economic base analysis for forecasts of the population growth of the Area.

A. The Method Employed

The term "economic base" is sometimes used to refer to the sum total of the resources in an economic system. In this report the term is used in a more limited and technical sense. The economic base is that part of the economy which produces goods, services and capital for sale to individuals or firms located outside the area. Industries which export goods, services or capital beyond the boundaries of Metropolitan Halifax are to be considered "basic industries". Industries which do not export goods, services or capital beyond these boundaries -- that is to say, industries whose activities are restricted to supplying

PART I

THE ECONOMIC BASE OF THE HALIFAX METROPOLITAN AREA

local needs -- will be called "service industries". This distinction between basic and local-service industries is important, for it is the basic or exporting industries which comprise the most likely and the most powerful stimulus to the growth of the total population, to the growth of the average level of income, and in fact to the growth of the service industries of the area.

No modern city or urban area is or can be self-sufficient, and exports provide the means of paying for the food, fuel, housing and other needs which it cannot obtain by using its local resources. It is true that population growth would result from the development of local industries to supply needs presently supplied from outside, but these possibilities are unlikely to have the same scope for growth as do the development of the basic industries. The population growth of an urban area requires either additional income from exports, production at home of previously imported goods, or a reduction in living standards.

Exports are accordingly crucial in determining the level of income in a city. The skilled factory worker earns more in purchasing power for the community than the motel maid, for example. And if the basic industries of the community are generally speaking high income ones, the average income of the community, other things being equal, will tend to be high. Oshawa, with its automobile factories, is likely to be a wealthier city than Sherbrooke, Quebec, whose textile workers are on average less highly paid. Moreover, the export base of a city influences its sensitivity to national economic conditions. Probably Oshawa would be more sensitive to nationwide recession than would Sherbrooke. The basic industries also determine generally the character of the local labour force, and, as mentioned, determine the scale and profitability of those industries which sell their products locally.

There are probably few, if any, industries or individual establishments within industries which are entirely basic, in the sense that they export their entire output. For example, most firms produce both for local consumption and for sale outside the community. Accordingly, industries must be ranked by the proportion of their output that is exported. The economic base is taken to consist of the parts, as it were, of the various industries which produce for export. It should be understood that a basic industry does not necessarily or even usually engage in manufacturing. This is particularly relevant to Halifax where the proportion of the labour force employed in manufacturing is well below the average for Canadian cities generally (31.8% for Canadian cities over 30,000 in population as compared with 10.4% for Halifax - See 1951 Census of Canada). Retail trade, health facilities and financial institutions also form part of the economic base in so far as they provide services for sale outside the area.

A number of techniques have been developed to identify and measure the economic base of an urban area. Choice of technique usually depends upon the data available, considerations of cost, the speed with which results can be obtained and the degree of accuracy required.

The method adopted in this study makes use of employment data and a concept known as the "location quotient". Data are not readily available for other methods, but the study should be reviewed when the results of the 1961 census are available and the opportunity should be taken to compare the findings with other data that might be obtained.

A location quotient is a figure which shows the ratio of the percentage of the population (or labour force or other variable) engaged in a given industry in a given area to the percentage of the population

(or labour force) engaged in the same industry in the nation as a whole. For example, if 2% of the population of Halifax were employed in shipbuilding and if 1% of the population of Canada were employed in shipbuilding, the location quotient for shipbuilding in Halifax would equal 2% divided by 1% or 2. A location quotient greater than unity for a particular industry is taken to mean that the industry in question is a net exporter of the good or service it produces. Similarly, a location quotient equal to 1 means that the local community is self-sufficient in the good or service produced by the industry, and a location quotient less than 1 means that the good or service is imported into the community.

When the location quotients have been calculated, it is possible to classify industries either as "basic" or as "service" in the sense defined above. In order to determine the actual number of workers in each industry who are engaged in producing for export, it is necessary to calculate the "export quotient" for each industry. This concept is closely related to the location quotient, for it is equal to the location quotient minus one divided by the location quotient. For example, if the location quotient for a particular industry were 4, the export quotient would equal $\frac{4 - 1}{4} = \frac{3}{4} = .75 = 75\%$. This would mean that 75% of those employed in this industry could be said to work for the export market.

In brief, then, the method employed in this study to determine the economic base of the Halifax Metropolitan Area is to calculate, for each industry, its "location quotient" and its "export quotient". While these terms are technical and unfamiliar, their meaning is relatively easy to grasp. In effect, a location quotient greater than

unity indicates an export industry, and the export quotient shows the percent of that industry engaged in exporting.

In concluding this section on the method of approach, it should be borne in mind that this discussion of the economic base theory, and of the method employed to determine the economic base, has been very brief. The Appendix to this report discusses in more detail the theory behind the economic base approach to urban analysis, and indicates that there are other methods by which it is possible to identify the economic base of an area. Also, some of the assumptions and the limitations of the location quotient approach are discussed.

In particular, the Halifax Metropolitan Area as defined in the 1956 Census includes Halifax City, the (then) Town of Dartmouth and eleven neighbouring communities. Unfortunately, the Halifax area was not classified as a metropolitan area for purposes of the 1951 census, and the 1956 Census does not give details on the employment of the labour force. Therefore, the figures in Column 1 of Table 1 are estimates based on the census figures for Halifax City and the Town of Dartmouth. Tables 2 and 3, however, make use of the actual census figures for Halifax City and the Town of Dartmouth, and are included here to supplement the metropolitan labour force estimates contained in Table 1. (Tables 4 and 5 show the labour force composition in Halifax City and in Dartmouth for census years prior to 1951.) The classification of industries in all tables follows census usage. (Note that "Service Industry" in census usage differs from "service

(1) Halifax Cove, Spryfield, Annsdale, Fairview, Warrington, Bedford, Dartmouth Lakes, Coal Harbour, Eastern Passage, Woodside, etc.

B. The Economic Base of the Halifax Metropolitan Area

Table 1 of this report shows the labour force, location quotients, export quotients and persons employed in working for export in Metropolitan Halifax for the census year 1951. Tables 2 and 3 give similar figures for Halifax City and for the Town of Dartmouth respectively.

The ideal "unit" for analysis of the economic base at the urban level is the "metropolitan area". For purposes of the Canadian census, a metropolitan area is defined as "a group of urban communities in Canada which are in close economic, geographic and social relationship". In particular, the Halifax Metropolitan Area as defined in the 1956 Census includes Halifax City, the (then) Town of Dartmouth and eleven neighbouring communities.⁽¹⁾ Unfortunately, the Halifax area was not classified as a metropolitan area for purposes of the 1951 census, and the 1956 Census does not give details on the employment of the labour force. Therefore, the figures in Column 1 of Table 1 are estimates based on the census figures for Halifax City and the Town of Dartmouth. Tables 2 and 3, however, make use of the actual census figures for Halifax City and the Town of Dartmouth, and are included here to supplement the metropolitan labour force estimates contained in Table 1. (Tables 4 and 5 show the labour force composition in Halifax City and in Dartmouth for census years prior to 1951.) The classification of industries in all tables follows the census usage. (Note that "Service Industry" in census usage differs from "service

(1) Herring Cove, Spryfield, Armdale, Fairview, Rockingham, Bedford, Dartmouth Lakes, Cole Harbour, Eastern Passage, Woodside, Imperoyal.

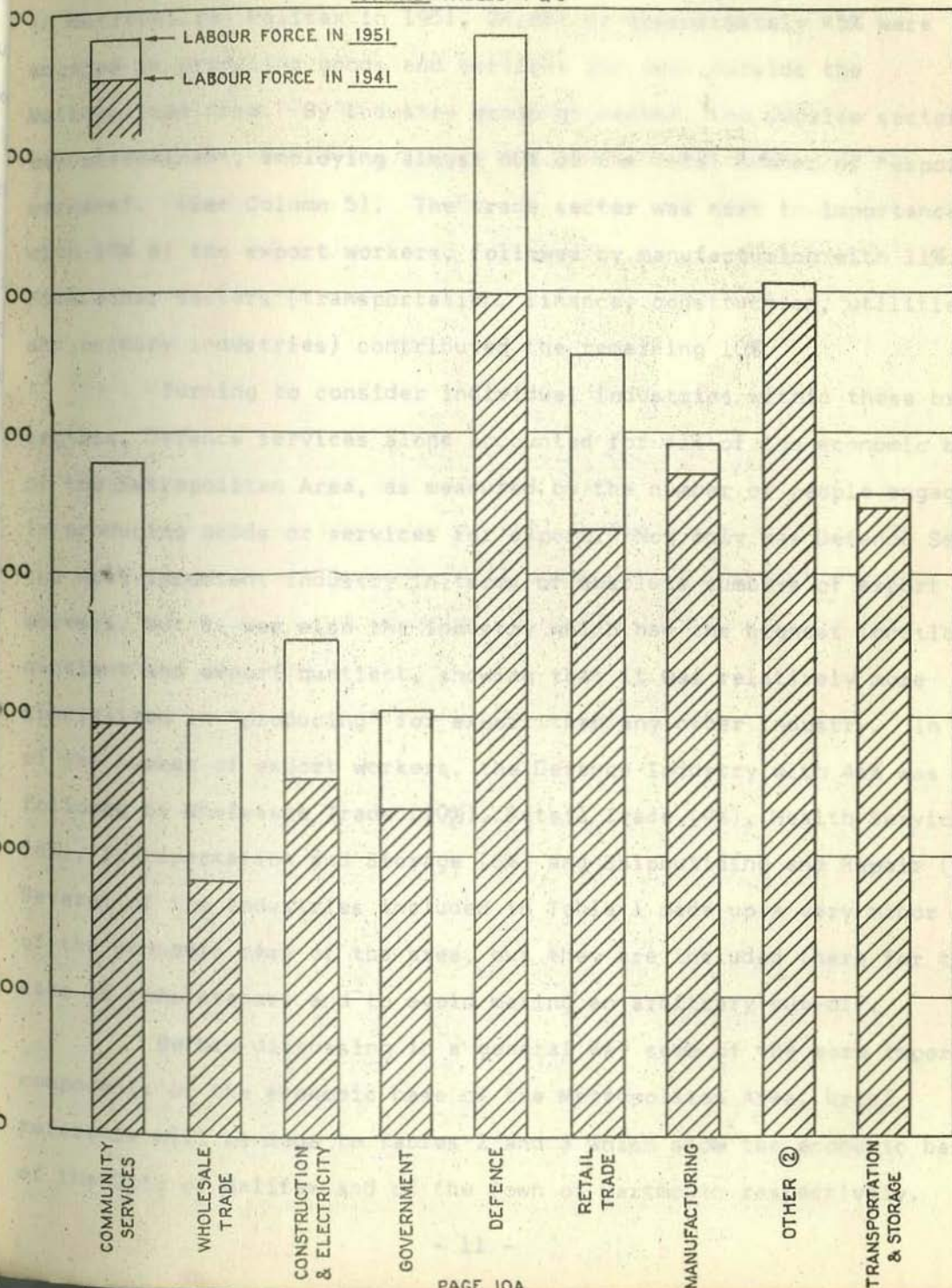
CHART I INDUSTRY

THE LABOUR FORCE OF HALIFAX & DARTMOUTH 1941 & 1951

(INDUSTRIES ARE ARRANGED IN ORDER OF LARGEST PERCENTAGE INCREASE IN LABOUR FORCE FROM 1941-1951)

FIGURES ARE FOR THE LABOUR FORCE AS A WHOLE AS DISTINCT FROM THAT PORTION COMPRISING "THE ECONOMIC BASE"
"OTHER" INCLUDES PRIMARY INDUSTRIES, FINANCE, PERSONAL & OTHER SERVICES

SOURCE: TABLES 4 & 5



industry" as used in this report in contrast to "basic industry").

Table 1 shows that of 55,510 persons in the labour force in Metropolitan Halifax in 1951, 24,851 or approximately 45% were engaged in producing goods and services for sale outside the Metropolitan Area. By industry group or sector, the service sector was predominant, employing almost 60% of the total number of "export workers". (See Column 5). The trade sector was next in importance with 19% of the export workers, followed by manufacturing with 11%. Five other sectors (transportation, finance, construction, utilities, and primary industries) contributed the remaining 10%.

Turning to consider individual industries within these broad sectors, Defence services alone accounted for 41% of the economic base of the Metropolitan Area, as measured by the number of people engaged in producing goods or services for export. Not only was Defence Services the most important industry in terms of absolute numbers of export workers, but it was also the industry which had the highest location quotient and export quotient, showing that it was relatively more specialized in "producing" for export than any other industry. In terms of the number of export workers, the Defence Industry with 41% was followed by Wholesale Trade (10%), Retail Trade (9%), Health Services (6%), Transportation and Storage (6%) and Shipbuilding and Repair (5%). Several of the industries included in Table 1 made up a very minor part of the economic base of the area, but they are included there for the sake of completeness and to avoid making an arbitrary cut-off.

Before discussing in a general way some of the more important components of the economic base of the Metropolitan Area, brief reference will be made to Tables 2 and 3 which show the economic base of the City of Halifax and of the Town of Dartmouth respectively. (The

CHART I

figures for Dartmouth refer, of course, to its boundaries prior to January 1, 1961). In general, the 1951 economic base of the two local government areas was similar. Services, trade and transportation activities were important components of the economic base of both areas as well as of the economic base of the Metropolitan Area as a whole. However, the manufacturing sector was significantly more important in the Town of Dartmouth, comprising 28% of its economic base as compared to 10% for the City of Halifax. Moreover, while the manufacturing sector in Halifax was, apart from shipbuilding, largely based on food and beverage industries, manufacturing in Dartmouth was concentrated in the shipbuilding, petroleum refining and aircraft industries.

C. A Discussion of Some of the Principal Components of the Economic Base of the Metropolitan Area

In this section some general comments are given on (1) Defence, (2) Trade, (3) Manufacturing, (4) Transportation and (5) Education and Health, all of which are important elements in the economic base of the Metropolitan Area.

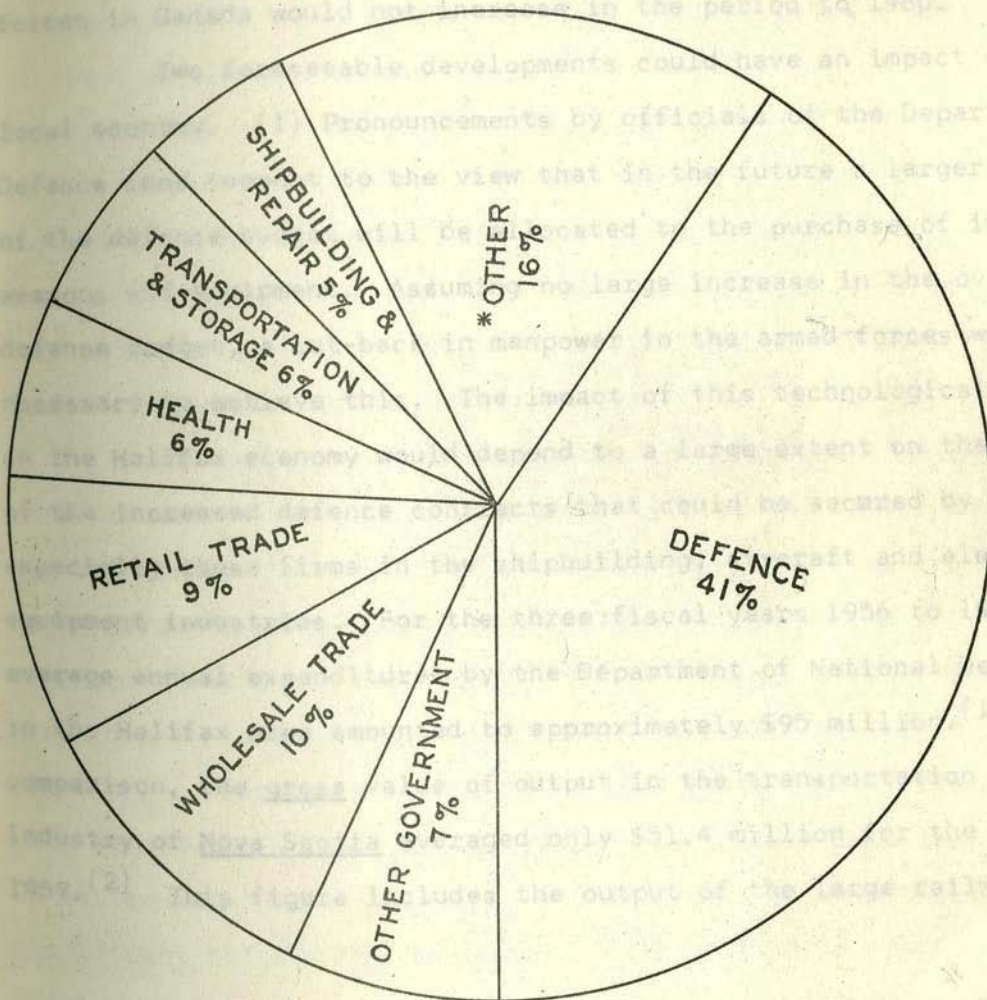
(1) Defence

The overwhelming importance of the various defence establishments to the economic base of the Halifax area has been indicated in Table 1 where it was shown that the defence services provided employment for 41% of the export workers of the Metropolitan Area in 1951. Reference to Table 4 will show that since 1921 the Defence Services industry has been by far the fastest-growing employer of labour in Halifax City, and, by inference, in the Metropolitan Area. It is unfortunate but true that conjectures as to the future employment patterns in the Halifax Metropolitan Area with regard to defence services are less likely to be meaningful than estimates of employment patterns

CHART II

THE ECONOMIC BASE OF THE HALIFAX METROPOLITAN AREA, 1951

SOURCE : TABLE I



* INCLUDES OTHER SERVICES, OTHER MANUFACTURING, FINANCE, CONSTRUCTION & ELECTRICITY

in any other line of activity. Factors such as markets, resources and changing techniques are not the main determinants of government outlays for defence. It is unlikely that the number employed in the Defence Services of Canada will increase in peace-time, however. The Royal Commission which in 1957 completed a study of the economic prospects of Canada assumed that the numerical strength of the armed forces in Canada would not increase in the period to 1980.

Two foreseeable developments could have an impact on the local economy. (1) Pronouncements by officials of the Department of Defence lend support to the view that in the future a larger proportion of the defence budget will be allocated to the purchase of improved weapons and equipment. Assuming no large increase in the over-all defence budget, a cut-back in manpower in the armed forces would be necessary to achieve this. The impact of this technological change on the Halifax economy would depend to a large extent on the volume of the increased defence contracts that could be secured by local firms, especially those firms in the shipbuilding, aircraft and electrical equipment industries. For the three fiscal years 1956 to 1959, the average annual expenditures by the Department of National Defence in the Halifax Area amounted to approximately \$95 million.⁽¹⁾ By comparison, the gross value of output in the transportation equipment industry of Nova Scotia averaged only \$51.4 million for the years 1956 & 1957.⁽²⁾ This figure includes the output of the large railway

(1) A.C. Parks, The Economy of the Atlantic Provinces 1940-1958, Halifax, June 1960, p. 114. The figure for Halifax is estimated from the Nova Scotia total, and includes pay and allowances and local purchases of supplies.

(2) Ibid, p. 78

rolling-stock plant in Trenton. Hence a substantial and probably unlikely increase in the output of the local shipbuilding, aircraft and electrical equipment industries would be required for a significant reduction in the defence services in the Halifax Metropolitan Area not to be accompanied by adverse repercussions on the local economy.

(2) It is possible that the present size of the defence services, or even an establishment reduced in size, could support a larger amount of local employment in the non-basic or service sector of the economy. This would occur if large-scale import replacement took place, i.e. if the defence services began to buy commodity X locally instead of importing it as at present. However, this is a highly speculative question. It is not argued here that substantial gains to the local economy could in fact be achieved in this way, but rather that the question requires further investigation.

It is worth emphasizing that the presence of a large defence establishment in Metropolitan Halifax is a strong factor working against seasonal and cyclical instability in the local economy. The armed forces provide year-round employment, and they are not normally affected by economic recessions. The Dominion Bureau of Statistics publishes an index of aggregate weekly payrolls (exclusive of military payrolls). Over the period 1956 to 1960 these figures reveal clearly that seasonal fluctuations in weekly payrolls are much less volatile in Metropolitan Halifax than in either Canada or Nova Scotia. It is significant that in the "recession year" of 1958 the index of aggregate weekly payrolls for Canada fell from 194.7 to 194.1 while the index for Metropolitan Halifax showed an increase from 181.3 to 182.6. Again, from September 1960 to January 1961 the index for Canada fell by 19.2

points while that for Halifax rose 13.9 points. (See Canadian Statistical Review, 1959 Supplement, and July 1961, D.B.S., Ottawa, Tables 9 and 11.) It seems reasonable to assume that much of this short-run stability of the local economy is the result of the stability of the dollar outlays of the military establishments in the area.

(2) Trade

Perhaps the most surprising figures of Table 1 relate to wholesale and retail trade, activities which would appear "a priori" to be "service" rather than "basic" in character. Nevertheless, as shown in Table 1, these industries employ 18.7% of the "export workers" of Metropolitan Halifax. The figures for wholesale trade are perhaps to be explained by the fact that Halifax is the distribution centre for a large part of Nova Scotia. To account for the high export content in retail trade, such factors as mail-order business, the tourist trade and purchases by residents of the surrounding area and by out-of-town students may be relevant.

(3) Manufacturing

Despite the fact that the eleven manufacturing industries specified in Table 1 accounted for 11.3% of the economic base of the Metropolitan Area in 1951, the area is a net importer of manufactured goods since the location quotient for the manufacturing sector as a whole is .535 (not shown in table). The exports of the eleven basic manufacturing industries were counterbalanced by imports of such manufactured products as iron and steel, motor vehicles, tobacco products, leather goods, etc.

Manufacturing provides a substantial element of the economic base of Metropolitan Halifax, but its role ought not to be over-emphasized. There is a general tendency in many discussions of economic development to equate such development with industrialization. Moreover, industrialization in this context is often taken to mean concentration in heavy industry - e.g. iron and steel - and in producer and consumer durable goods. A more reasonable approach would appear to be that manufacturing or industrialization is only one factor in economic growth, a factor which may vary in importance in different areas and at different times. This is not to imply that manufacturing has not been, will not be or should not be an important factor in the growth of Metropolitan Halifax. Rather, the point is that manufacturing is not necessary for the economic development of an area. This fact is illustrated by the growth of Halifax City in the past 40 years. From 1921 to 1951 the manufacturing labour force in Halifax increased by a mere 1.3% while the population of Halifax increased by 46.6% (See Table 4).

Many factors are involved in the decision to locate a manufacturing plant in a given area, and it is therefore not easy to forecast future employment patterns in this sector of the economy. If the data are available, perhaps the best way of forecasting future trends in manufacturing is to analyze current figures on new capital expenditure on plant and equipment. Investment figures would be useful in assessing future trends in other sectors of the economy as well, but unfortunately, at the local level, such data are usually available only for manufacturing sector, if indeed for that. Most investment is

done in anticipation of profitable returns over a relatively long period, and, because of this, investment figures indicate how those who make the capital expenditure view the economic prospects of the area.

"Because these investments reflect long-term planning, they provide a tangible summary of many factors, most of them individually unmeasurable, which jointly determine the regional distribution of industrial expansion." (1) For example, if an area's share of net investment in a certain industry over the past few years is greater than the area's share of "value-added" in that industry, it is probable that the area's share of future output and employment in that industry will rise.

In a recent study of the economic base of Chicago, it was shown that the primary metals industry of Chicago in 1956 accounted for 11% of the output of the primary metals industry of the United States (measured by value-added), but for 15% of the capital expenditures of this industry in the country as a whole. From this it was concluded that Chicago's share of the national market will increase and that Chicago's relative dependence on this industry will also increase. (2)

Unfortunately, however, data on recent investment within the Halifax Metropolitan Area are hard to obtain. Under the law which regulates its activities the Dominion Bureau of Statistics is not allowed to publish statistics for a given industry in any area if two or three large firms account for most of the output of the industry concerned. With the possible exceptions of the Carbonated Beverages

(1) E. Solomon and Z Bilbija, Metropolitan Chicago, an Economic Analysis, Glencoe, Ill., 1959, p. 59.

(2) Loc. cit. pp. 92 and 96

and the Commercial Printing industries, the manufacturing industries listed in Table 1 are highly concentrated in the sense that one or a very few number of firms employ most of the persons engaged in any particular industry in the local area. The Department of Trade and Commerce in a recent publication gives only the total figure for capital expenditures by all manufacturing establishments in the Halifax Metropolitan Area.⁽¹⁾ Comparing these figures with the percentage of total "value added" attributable to manufacturing in the Halifax Area, the following results are obtained.

In 1957, approximately .61% of the "value added" by all manufacturing industries in Canada was accounted for by establishments in the Halifax Metropolitan Area.⁽²⁾ In the same year, investment in new plant and equipment in the Halifax Metropolitan Area accounted for .91% of investment in manufacturing in Canada. However, since investment tends to fluctuate greatly from year to year, a longer period gives a more accurate picture. In 1958 investment in the Halifax Area accounted for .43% of the Canadian total, in 1959 .50% and in 1960 .66% (estimated).⁽³⁾ The four year average is thus .64%, as compared with .61% of "value added" in 1957. In other words, manufacturing investment in Halifax and hence employment and output

(1) Department of Trade and Commerce, Private and Public Investment in Canada, Outlook 1960, Regional Estimates, Ottawa, 1960, p. 13

(2) The Manufacturing Industries of Canada, 1957, Section G, D.B.S. Ottawa, June 1959, pp. 10 and 25. The percentage given is a minimum since it was obtained by "pro rating" the calculated "value added" figure for Halifax County on the basis of the 1956 census figures for the population of the Metropolitan Area and of the County. Since it is a minimum figure, it shows investment in manufacturing in the area in its most favourable light. Even this, it will be seen, is not too favourable.

(3) Department of Trade and Commerce, op. cit., p. 13. The 1957 figure is from p. 13 of Outlook 1959.

in manufacturing, appear to be maintaining their relative position within the industry in Canada. The figures indicate that no appreciable increase beyond the Canadian "average" or "normal" is to be expected if present investment patterns continue.

(4) Transportation

Two recent developments, the St. Lawrence Seaway and the Halifax International Airport, are frequently mentioned as factors which will affect materially the economic prospects of the Metropolitan Area. The Seaway is generally considered to be detrimental to Halifax, while the Airport is seen as a powerful factor of economic expansion.

The Seaway, especially if it can be kept open in the winter months, will undoubtedly decrease the share of "new" trade moving through the Port of Halifax, but it does not seem likely that it will reduce materially the volume of trade which moved through Halifax prior to the completion of the Seaway. In 1958, 3.4 million tons of cargo were unloaded in the Port of Halifax. Of this inward traffic, petroleum products accounted for 86%, motor vehicles and parts for 3%, fish for 2%, vegetable oils and rubber for 1% each, and other cargo for the remaining 7%. In the same year, outbound cargo amounted to 3.6 million tons, made up of crude gypsum (39%), petroleum products (36%), grain and flour (13%), fish (2%), potatoes (1%), and other cargo (9%). The figures for 1957 are very similar.*

On the assumption that the petroleum products are imported for use in the Atlantic Provinces, only grain, motor vehicles, rubber

* See Canadian National Railways, Development Branch, An Industrial Survey of the Halifax-Dartmouth Area, Montreal, 1959, pp. 44-5

and some smaller amounts of other cargo would appear to be vulnerable to competition from the Seaway. One qualification to this is that these potentially vulnerable commodities probably require more "labour per ton shipped" than do, say, petroleum and gypsum. Furthermore, an all-season Seaway would impinge upon passenger traffic through Halifax in the winter months. On the credit side, the Port of Halifax will probably benefit to some extent from the general economic expansion in Canada resulting from the Seaway.

With regard to the economic impact of the new International Airport, two points should be made.

1) An airport by itself will not induce complementary or ancillary industry to develop unless underlying economic conditions are favourable. The case of Gander, Newfoundland, should be enough to demonstrate this point. On the other hand, recent industrial development in the neighbourhood of the Shannon International Airport shows that, in favourable circumstances, an airport can be an important stimulus to economic growth. (2) The actual increase in base employment in air transportation in the Metropolitan Area has been negligible to date: Kelly Lake's gain was Shearwater's loss.

(5) Education and Health

Education and health both appear as basic industries of Metropolitan Halifax in Table 1. It is possible that the technique used in calculating this table understates the importance in the local economy of education, especially the role of universities, colleges and other institutions of higher learning as earners of "export dollars". It has been calculated that from 1951 to 1958 9% of the students at Dalhousie University came from outside the Atlantic Provinces, and the

percentage coming from outside the Metropolitan Area is undoubtedly much greater. Since in the academic year 1959 to 1960 there were 4092 students enrolled in 9 educational institutions in the area, the contribution of education to the economic base may be much larger than indicated in Table 1. (1)

Some confirmation of the basic character of health services is provided by the fact that whereas the Halifax Metropolitan Area comprises 4% of the population of Nova Scotia, 40% of the hospital beds for adult patients in the province are to be found in the eight hospitals in the area. (2) This percentage is likely to increase as both the Halifax Infirmary and the Victoria General Hospital are undergoing or planning extensive enlargement.

2. Conclusion of Part I

The main purpose of Part I of this report has been to identify and discuss in general terms the components of the economic base of the Halifax Metropolitan Area as revealed by the "location quotient" technique. Little attention has been paid to forecasting future developments except by way of a few scattered remarks. This part will conclude with a discussion of some of the problems encountered in forecasting the future pattern of economic growth of the Metropolitan Area.

Speaking generally, it can be said that the economic future

(1) See The Atlantic Almanac 1960, pp. 83-86 for figures on enrolment.

(2) Ibid, p. 90

of Metropolitan Halifax will be determined by three factors: - (1) the economic growth of Canada as a whole, (2) the economic growth of the Atlantic region of Canada of which the Halifax area is a part and (3) the economic resources possessed by the metropolitan area which can be exploited and adapted to meet the changes which will occur in techniques of production and distribution, in consumer tastes, in population patterns and in defence policy. (In the terminology of economics, "the theory of economic growth", "the theory of regional development" and "the theory of location", respectively, are used to analyze these three factors). More specifically, the future growth of the Metropolitan Area will be determined by the future pattern of the demand for the goods and services which the area is able to produce and sell on a competitive basis. Analysis of the long-term growth of national economies usually concentrates on assessing trends in the supplies of the various factors of production such as labour, capital and managerial ability. In an analysis of the long-term growth of a metropolitan region, on the other hand, it is the demand factor which must be particularly emphasized (unless, of course, the economy of the metropolitan area is based upon an exhaustible natural resource such as local coal deposits). The reason for this emphasis on the demand factor at the urban level is that factors of production within a country are relatively mobile and will generally move to wherever they can obtain their greatest earnings. "Since internal migration is predominantly of economic origin, any estimates of future changes in the labour force in large metropolitan centres must be based upon an analysis of changes in the demand for goods and services in which the

local economy specializes."* This internal mobility is characteristic of capital as well as of labour. With regard to natural resources, including land suitable for commercial or residential purposes, there is no mobility, but most metropolitan areas, including Halifax, are predominantly industrial or service type economies which do not depend on exhaustible resources. Natural resources, of course, do influence the growth of metropolitan areas: Halifax would be a very different place if somehow or other the harbour ceased to exist. Natural resources are, however, in an important sense a given or an unalterable factor in the local economic environment: their economic significance is related to the demand for the goods and services in the production of which they are useful.

In the framework of an economic base analysis, the key factor is the probable demand for the goods and services produced by the basic industries of the area and by any basic industries that might be attracted to the area. Major basic industries of the Halifax Metropolitan Area are as follows:- (1) Defence Services, (2) Wholesale Trade, (3) Retail Trade, (4) Health Services, (5) Transportation and Storage, and (6) Shipbuilding and Repair. These six industries employed 58% of the total labour force and 76% of the persons employed in the basic industries of Metropolitan Halifax in 1951. To forecast the specific output and employment patterns of each of these six industries for, say, the next 20 years, would require extensive technological and market analysis beyond the scope of this study.

On general observations one would be tempted to say that

* E. Solomon and Z Bilbija, Metropolitan Chicago, an Economic Analysis, The Free Press of Glencoe, Illinois, 1959, p. 59.

spects in the foreseeable future for a dynamic expansion in any of these six industries do not appear to be favourable. The 11th Service industry and the Transportation and Storage sector provide possible exceptions. To conclude on a more optimistic note, however, it is perhaps possible to predict a steady if unspectacular rate of growth for the basic industries, other than defence, of the Metropolitan Area.

In connection with the expansion of per capita real income which it is almost universally predicted will accrue steadily to residents of Canada over the years, it would appear that the Halifax area is in the favourable position of producing goods and services for which there is a high income elasticity of demand (that is to say, as income increases the percent of income spent on a particular commodity increases). Of the eleven major basic industries of the area (excluding defence services, for which there are no clear "a priori" presuppositions), wholesale trade, transportation, health services, retail trade, financial services, confectionery, petroleum products and aircraft could appear to be industries where the income elasticity of demand is close to or greater than unity. With regard to federal government services, shipbuilding, and canned fish, it is less easy to generalize.

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Population forecasts, for the whole nation, are subject to
considerable uncertainties which cannot be predicted with assurance.
The difficulty of forecasting the population of a
city or a county, the difficulties are enormously
increased. As noted by W. C. A. Scott in a report for the
Royal Commission on the Economic Prospects, entitled "Our
Future" (1957), "The problem is that after
the information we have, we have to realize
that a projection of population will be more than an
educated guess, subject to a wide margin of error." (Page 173)

PART II

IMPLICATIONS
of
FORECASTS OF POPULATION GROWTH
of the
HALIFAX METROPOLITAN AREA

The population forecasts for Halifax, referred to above,
are obtained by projecting recent trends into the future. This is
not the method used in the past and it has been widely
criticized. It may, however, give a rough
idea of the forecasts, so made, have frequently proved to be far
from accurate. However, the additional consideration of the past
birth and death rates, which have been shown to be
not enough to explain the total population increase in
the past century in Halifax, is extremely high and
it is clear that in forecasting the population of Halifax
it is necessary to consider the historical and social factors
which have influenced the population growth.

Part II Implications of Forecasts of Population Growth of the
Halifax Metropolitan Area

A. Introduction Several investigations and considerable activity in urban development, combined with growing interest in planning, have given rise in recent years to a number of forecasts of the future population of the Halifax area.

Population forecasts, for the whole nation, are subject to a number of considerations which cannot be predicted with assurance. But when it becomes a question of forecasting the population of a small area such as a city or a county, the difficulties are enormously increased. As noted by W. C. Hood and A. Scott in a report for the Gordon Royal Commission on Canada's Economic Prospects, entitled "Output, Labour and Capital in the Canadian Economy", the problem is that "after all the information in the record is marshalled, we have to realize that a projection of regional population sizes cannot be more than an informed guess, subject to a wide margin or error." (Page 179)

The population forecasts for Halifax, referred to above, were obtained by projecting recent trends into the future. This is a method often used and in cases where more refined methods are not available may give useful, even if hazardous, results over a short period. But forecasts, so made, have frequently proven to be far from accurate. Moreover, the additional consideration of the past pattern of birth and death rates, combined with past population growth, is not enough because mobility of labour and population in and out of the urban centres of Canada, including Halifax, is extremely high and variable. It is clear that in forecasting the population of small areas, the most promising way to obtain reasonable and useful results is to

recognize at first the need for considering economic prospects, both nationally and locally.

B. Population Growth in the Past

Population figures for Canada, Nova Scotia and the Halifax area are presented in Table 6. These figures cover the period 1931 to 1956. With regard to the relation between the population of Halifax County on the one hand and the population of Nova Scotia and Canada on the other, these census figures reveal an interesting pattern. (Figures for Halifax County are used as early figures for the Metropolitan Area are not available.) In every census period from 1931 to 1956 the population of Halifax County increased by a much larger percentage than the population of Nova Scotia or the population of Canada. This is shown in the following table.

Percentage Increases in Population

<u>Census Interval</u>	<u>Halifax County</u>	<u>Nova Scotia</u>	<u>Canada</u>
1931-41	22.4%	12.7%	10.9%
1941-51	32.3%	11.2%	18.6%
1951-56	22.8%	8.1%	14.8%

On the average, the population of Halifax County in this period increased 2.4 times as fast as the population of Nova Scotia and 1.7 times as fast as the population of Canada. Labour mobility was an important factor in connection with this large increase in the population of Halifax County in this 25 year period. For example, of the increase of 35,726 in the population of Halifax County from 1951 to 1956, 15,060 or 42% was due to net migration to the county. (See Census of Canada, 1956, Bulletin 3-1, p.20)

C. Population Forecasts

The figures above give perspective to estimates which have been made of the population expected in various regions for 1980.

The Gordon Commission estimates that from 1959 to 1980 the population of Canada will increase by 52.8% and the population of the Atlantic provinces will increase by 27.1%.⁽¹⁾

In a study of the Halifax Metropolitan Area prepared by Canadian-British Engineering Consultants, it is estimated that the population of the Metropolitan Area will be 300,000 by 1980, an increase of 76.5% over the 1959 population figure.⁽²⁾ On the basis of these estimates, the population of Metropolitan Halifax is expected to increase 2.8 times as much as the percentage increase expected in the Atlantic Provinces and 1.4 times as much as the percentage increase expected for Canada for the period 1959 to 1980. While these expected increases do not compare unfavourably with past trends in the population growth of the Metropolitan Area, it should be remembered that if they are to be achieved, the substantial amount of previous net migration into the area must be maintained. This will be the case only if the basic or exporting industries of the area expand sufficiently to provide the required employment.

The population estimates for Halifax by Canadian-British

(1) Hood and Scott, Output, Labour and Capital, p. 180.

(2) Canadian-British Engineering Consultants, Halifax Metropolitan Area, Volume B, September 1956, Halifax, N.S., p.5. The estimates given for 1970 and 1985 have been interpolated to arrive at the figure for 1980.

Engineering Consultants (from which the 300,000 figure above was derived) were made "on the basis of past trends and our population estimates for 1955... (taking) account of the resources, industries and facilities of the Area and the possibilities of their future development...."* It is interesting to note that if the population figures for Metropolitan Halifax for the years 1951 and 1956 are plotted on an ordinary graph and projected in a straight line to 1980, a figure very close to 300,000 results. The validity of this mechanical approach is, however, doubtful.

D. Implications of Population Forecasts

Despite possible criticism which might be made of the estimate of 300,000 by 1980, it may be useful to show what this estimate appears to imply in terms of the composition of the labour force in 1980. Table 7 is an attempt along these lines. The composition of the Halifax Metropolitan labour force in 1959 was estimated, mainly on the basis of Dominion Bureau of Statistics index numbers of employment in the area, and these figures were projected to 1980 on the basis of forecasts prepared by W. Hood and A. Scott for the Royal Commission on Canada's Economic Prospects.

In their study "Output, Labour and Capital in the Canadian Economy", Hood and Scott estimate the percentage increase in the employed labour force between 1953-55 and 1980 for various sectors of the national economy.(1) These estimates were used to estimate

* Op. cit., p.3

(1) Hood and Scott, op. cit., p. 316

percentage increases from 1959 to 1980 for Canada, and these national estimates are in turn used to project various components of the Halifax Metropolitan labour force in Table 7. The assumption made is that the labour force of the Metropolitan area will increase at the same rate as the national labour force in certain sectors. If anything, this assumption would appear to be optimistic, in view of estimates of the economic growth of the Atlantic Provinces made elsewhere. (1) It is, of course, possible that Halifax will experience a faster rate of growth than the Atlantic Provinces as a whole, but it is unlikely to exceed the Canadian rate of growth in the individual sectors of the economy. In Table 7 the manufacturing sector is left as a residual: after the expected increases in all other sectors have been calculated, they are subtracted from the total expected labour force to give an estimate of the "expected" labour force engaged in manufacturing.

Table 7 is not really a forecast of the distribution of the metropolitan labour force in 1980: its construction has been too "mechanical" to dignify it with that title. It does point out the fact that a population of 300,000 by 1980 is possible without any increase, taking place in the defence services if manufacturing increases at a rate of about $1\frac{1}{2}$ times the Canadian average. It does not, however, enable one to say whether or not such an increase is

(1) See especially R. D. Howland, Some Regional Aspects of Canada's Economic Development, p. 144:- "It is somewhat less easy to identify the Atlantic Provinces with Canada's bright prospects of future growth", and A. C. Parks, The Economy of the Atlantic Provinces, 1940-1958, p. 115:- "...there is every reason to expect that the rate of economic growth will be greater in other parts of the country than in the Atlantic Provinces.... It may be assumed that the rate of services employment growth...will be less pronounced in the Atlantic Provinces than in Canada as a whole."

probable, nor does it reveal any of the underlying economic factors which influence the growth of population in the Halifax area.

In Table 1 it was calculated that 24,851 persons out of a total labour force in 1951 of 55,510 persons were employed in providing goods and services for export from metropolitan Halifax. According to the theory of the economic base outlined in Part I, these 24,851 basic industry employees "supported" service industries which employed 30,659 persons. The ratio of basic to service employees was 1:1.2, which means that for every 10 jobs provided for export workers, 12 more workers are eventually needed in the service industries, assuming that the base-service ratio remains constant over time. Similarly, the ratio between basic industry employment and total population in 1951 was 24,851: 133,931 or 1: 5.4.

However, when the export quotients calculated in Table 1 are applied to the metropolitan labour force distribution for 1980 as shown in Table 7, the number of workers engaged in working for export in 1980 is found to be 51,748 (not shown in Table). On this basis, the ratio of base workers to service workers is 1: 1.4 and the ratio of base workers to total population is 1: 5.8.

How can these apparent changes in these significant ratio be explained? In the first place, by 1980 the export quotients for certain industries may increase. This means that these industries will be exporting a greater percentage of their output in 1980 than in 1951, and hence that the figure of 51,748 for base workers in 1980 is too low. For what industries is this likely to be the case, and for what reasons? In the second place, by 1980 a given number of base workers may be able to "support" more workers in the service industries, either

because of increasing import-replacement, which would result in a higher employment multiplier as relatively fewer dollars "leak out" of the Metropolitan Area, or because of higher per capita incomes for base workers, which would result in increased demand for the products of the local service industries. For what goods and services is import replacement economically feasible, and are the basic industries of the area likely to generate high per capita incomes? A third possibility is that new basic industries will develop in the Metropolitan Area. For what industries can this be predicted and to what extent will they develop in the next 20 years? These questions are important, for in terms of conditions prevailing in 1951 an economic base of 51,748 persons would support a population of 280,000 rather than one of 300,000 in 1980. ($51748 \times 5.4 = 279,439$).

In conclusion, it must be emphasized again that Table 7 is constructed on the assumption that all sectors of the economy of the Metropolitan Area, except manufacturing, will increase at the rates predicted for the various sectors of the national economy. Manufacturing is assumed to increase at an even faster rate: in fact, one and one-half times as fast. These assumptions require support and the above questions require answers before one could safely predict a population of 300,000 for Metropolitan Halifax by 1980. The 1961 Census figures, when available, will undoubtedly be useful in assessing recent trends in the local economy and in providing partial answers to these questions.

This appendix presents one of the reasons for using the economic base approach when analyzing urban economies, and then outlines various methods by which the economic base can be defined. The concluding section deals with some of the usual difficulties of the approach used in the present study.

The Economic Base Approach

The economic base has been identified with those sectors of metropolitan economy that sell goods or services to nonresidents of the area. The justification for this procedure can perhaps be most fully seen by comparing the economic base analysis with the so-called "regional multiplier" approach.

A P P E N D I X

Usually, when economists seek to estimate the level of national income, they consider the level of expected expenditures of business firms and of expected expenditures of government. These two elements of national income are considered as the independent, or exogenous, elements, while

THE ECONOMIC BASE APPROACH TO URBAN ANALYSIS

the dependent, or endogenous, elements are those expenditures induced by the expenditures of firms and of government. In this sense, national income is roughly the sum of consumer, investment, and government expenditures. However, expenditures of government are excluded because they are not considered as independent elements. In fact, the level of national income can be estimated by the expenditure multiplier method, which is based on the assumption that the level of national income is a function of the level of government and investment expenditures.

Since national income is roughly the sum of consumer, investment, and government expenditures, it is possible to estimate the level of national income by the expenditure multiplier method. However, expenditures of government are excluded because they are not considered as independent elements. In fact, the level of national income can be estimated by the expenditure multiplier method, which is based on the assumption that the level of national income is a function of the level of government and investment expenditures.

Appendix The Economic Base Approach to Urban Analysis

This Appendix presents some of the reasons for using the economic base approach when analysing urban economies, and then goes on to outline various methods by which the economic base can be identified. The concluding section deals with some of the assumptions and limitations of the approach used in the present study.

A. The "Economic Base" Approach

The economic base has been identified with those sectors of the Metropolitan economy that sell goods or services to non-residents of the area. The justification for this procedure can perhaps be most easily seen by comparing "economic base" analysis with so-called "national income" analysis.

Roughly speaking, when economists seek to estimate the level of national income for, say, the following year, they look at figures of expected investment by business firms and of expected expenditures by governments. These two elements of national income are considered to be the volatile, independent or autonomous elements, while expenditures by households are considered to be dependent upon and induced by the expenditures of firms and of governments in a predictable way. Since national income is (roughly) the sum of consumer, investment and government expenditures, knowing expected private investment and government expenditures, and knowing the relation between these two elements and consumer expenditures, the national income can be estimated. In effect, the estimation process is split into two parts: first identify and quantify the independent variables and second show the relation between these independent variables and the so-called dependent

variables. The proof of the pudding is in the eating, and the procedure is justified only if it gives useful results. The trick is to distinguish the independent and the dependent variables correctly. Economic relationships are, of course, highly complex, and in a sense it is true in economics that everything is dependent on everything else. However, the reply to this is that some things are more dependent than others.

In the same way as business investment and government expenditures are considered to be the independent variables in national income analysis, so the basic industries are considered to be the independent variables in urban income analysis. To state it differently, the basic industries are seen as determining the amount of employment in the service industries, the total population and the level of income of the city. In particular, growth takes place as a result of expansion of the basic industries, an expansion which is transmitted over time to the service industries. If this hypothesis is accepted, the problem becomes one of establishing the relationship between the basic and the service industries and of estimating the development over time in the basic industry sector of the urban economy.

Two obvious questions arise. (1) Is the base-service ratio a stable relationship, in the sense that it is constant over long periods of time? If it does not remain constant, can changes in the base-service ratio be predicted with reasonable accuracy, perhaps by analysing how the ratio has changed in other metropolitan areas with roughly similar circumstances? (2) Is it possible to forecast the development of the basic industry sector of the economy more accurately than the development of the urban area as a whole? These and other questions have attracted the attention of many investigations of the

economic base of various communities. While some of the evidence is inconclusive, it seems generally agreed that the economic base approach provides a useful starting point for urban economic analysis. Such an approach can avoid generalizations based more on a hazy optimism than on a consideration of economic realities. At a minimum, there is more pressure to give acceptable reasons when a forecast is in the form, "This particular combination of industries will increase their output and employment by x% over the next decade", than when the forecast reads, "The area as a whole will develop by x% over the next ten years."

B. Identification of the Economic Base

At least four techniques have been used in various studies to identify and measure the economic base of an urban area - (1) the questionnaire approach, (2) the dollar-flow approach, (3) the input-output approach and (4) the location quotient approach. Choice of a particular technique for a given study is usually dictated by considerations of cost, speed and accuracy required. The mechanics of each of the above techniques will be briefly indicated.

(1) The questionnaire approach - One obvious way to find out where a firm sells its products is to ask some such person as its sales manager. A sampling of firms or a 100% coverage could be used, and the results could give a clear picture of the basic and service makeup of the community. However, in many cases the firm itself might not be able to provide the answers. (For example, what proportion of the sales of T. Eaton and Co., are made to non-residents of Halifax?). In a large city the cost of administering the questionnaire could be great.

(2) The dollar-flow approach - This approach is expensive and to date its use has been restricted to small urban areas. A "balance of payments" statement, similar to the international balance of payments statements now in common use in analyzing a nation's trade relations, is prepared for the particular area considered. This involves the tracing of dollar volumes of exports and imports, as well as the net flow of income from rent, profits, interest, pensions, insurance transactions and government transfer payments. These latter receipts, which arise mainly from capital having been exported from the area, may form a significant part of the export earnings and hence of the export base. However, they are difficult to trace, and in fact in most studies of the export base, they have had to be ignored. In particular, the analysis of the economic base of the Halifax Metropolitan Area contained in Part I of this report has had to leave out capital earnings and government transfer payments accruing to residents of the area, a significant omission.

(3) The input - output approach. Input-output analysis is a highly sophisticated technique. The basic data required for an input-output analysis are the dollar inputs required from all other industries in the area to produce one dollar of output by a given industry. These input figures must be obtained for the output of all industries in the area. As an illustrative example, to produce one dollar of food products in the St. Louis Metropolitan Area requires inputs from local industries as follows - 4.1¢ from food and kindred products, .4¢ from paper and allied products, .2¢ from railway transportation, 5.6¢ from medicine

and education, 15.1¢ from eating and drinking places, 7.5¢ from households (i.e. for labour), and smaller amounts from many other industries.⁽¹⁾ This information can yield useful results. For example, if final demand for the product of an industry increases, several repercussions are felt in the local economy - (1) the industry concerned increases its purchases from other industries and from households, (2) these "linked" industries increase their purchases from industries linked to themselves, (3) the personal income of consumers is increased and an expansion in consumer purchases is induced, (4) and finally increased investment may take place if the expansion is felt to be relatively permanent. The input-output technique makes it possible to trace through these effects. In the St. Louis study, an increase of \$1,000,000 in the final demand for printing and publishing was shown to give rise to an over-all increase in local income of \$870,000, whereas a similar increase in the demand for petroleum and coal products gave rise to an over-all increase in local income of only \$220,000. The difference is accounted for by the fact that the printing and publishing industry uses relatively fewer imported inputs than the petroleum and coal industry. The effect on "linked" industries is therefore greater if the original expansion takes place in the printing and publishing industry.

Input-output analysis has been used to analyze economic relationships at the national, regional, state and metropolitan levels. It is, however, expensive to undertake. In the St. Louis study, for example, representatives from each major firm and institution in the

(1) W.Z. Hirsch, "Interindustry Relations of a Metropolitan Area." The Review of Economics and Statistics, November 1959, Appendix Table 1.

city worked closely with the research organization responsible for the project for a total of three months. In considering its applicability to metropolitan Halifax, a thorough preliminary study would undoubtedly be needed to ascertain whether or not an input-output study would be justified in terms of the questions it would answer and the costs involved.

(4) The location-quotient approach. The location quotient technique outlined in Part I of this report is the least expensive and the fastest way to identify and measure the economic base of an area. However, cheapness and speed are attained at some cost, and the next section will deal with this question.

C. Assumptions and Limitations of Location Quotient Approach

A location quotient shows the degree of participation in an industry by the population of one area in relation to the participation by the population of another area. For this technique to be reasonably accurate in identifying the base and service sectors of the Metropolitan Halifax economy, three assumptions would have to be applicable to each industry considered.

These assumptions are:- (1) Canada as a whole is relatively self-sufficient, (2) output per worker in Halifax is identical to that in Canada, and (3) consumption per capita is identical between Halifax and Canada. These assumptions are not, of course, fully realized in fact, but it might be possible to make allowances in particular cases where the location-quotients by themselves might be misleading. If, for example, it were known that consumption per capita in Halifax of, say, confectionery was double the national average, then a location

quotient for the confectionery industry equal to 2 would mean that Halifax was self-sufficient in producing confectionery. Again, since Canada as a whole is a large exporter of newsprint, a location quotient for newsprint in Halifax less than unity would be compatible with newsprint being an export from Halifax, (and "vice versa" for a commodity imported into Canada). Many more such examples could be given.

As to the validity of these assumptions, it seems plausible to assume that Canada is self-sufficient with respect to most of the major components of the economic base of the Halifax Metropolitan Area (i.e. defence, wholesale and retail trade, health services, and even transportation in so far as land transportation and direct services to shipping are concerned). The assumptions concerning equal output per worker (by industry) and equal per capita consumption of goods and services are more hazardous. However, the technique is relatively crude and should be interpreted as indicating only the rough order of magnitude of the economic base and its components. Moreover, as indicated previously, it ignores the role of capital earnings and transfer payments in the economic base.

In conclusion, there remains to consider the advisability of using data on employment to measure the economic base of an area, rather than data on wages or income or value of production.

In a study of an urban or regional area, it is useful to be able to make comparisons between the area considered and the nation as a whole. A series of figures relating, to, say, the personal income of the residents of a city, conveys little meaning unless it can be related to a similar provincial or national series. It is obvious that in order

to make meaningful comparisons the series used must be similar: that is to say, the figures must refer to the same thing in both series and the definitions of the economic entity measured must correspond. There are, unfortunately, few such series of figures available in Canada which can be used to compare urban and national economic development. In particular, statistics describing the economic position of metropolitan Halifax are scarce. A measure of the economic base of an area, could use as basic data figures on employment, on payrolls, on value added, on value of production, on physical production, or on community income and expenditure. Of these six possible measures, only figures for employment are available with a sufficiently detailed breakdown to be useful in a study of Metropolitan Halifax. Payroll figures for the area are available monthly, but are not broken down by industry. Value added or value of production figures are available on a province-wide basis only, and they exclude such sectors of the economy as education, health and defence services. Physical production figures are again available on a province-wide basis for a few commodities (i.e. coal, electric power, fish, etc.) Community income and expenditure figures for the area do not exist: for the province there are statistics available for personal income, personal disposable income (i.e. after taxes), interest, dividends, net rental income, and government transfer payments. However, even though their use is partly dictated by a mere process of elimination, one author who has written extensively on the problem states that employment figures give the best single measure of the economic base of a metropolitan area. (See Richard B. Andrews, "Mechanics of the Urban Economic Base: The Problem of Base Measurement", Land Economics,

Feb. 1954, p. 59, for a discussion of the problem. This article is one of a series of 12 on urban economic base analysis).

T A B L E 3

Table 1. The Structure of the Mexican Manufacturing Sector, 1993

Industry Group	Employment (thousands)	Production (Quadrillion)	Exports (Quadrillion) (% of total)	Imports (Quadrillion) (% of total)	Percentage of Total Exports (% of total)
A. Services Sector					
1. Wholesale Services	1139	11,519	91.32	2017.4	49.81
2. Retail	2999	1,930	48.32	1001	5.84
3. Financial & Real Estate Serv.	2799	3,961	29.01	162	3.27
4. Other Federal Government	1196	1,100	45.92	368	3.75
5. Other Community & Municipal	2000	1,535	10.75	759	3.25
6. Personal Services	3000	1,154	13.34	462	1.66
7. Education	600	1,207	17.15	290	1.17
Sub-total	15000			14834	59.64
B. Trade Sector					
1. Wholesale Trade	200		1.93	2668	6.53
2. Retail Trade	711		10.89	2194	6.80
Sub-total	911			4862	18.72
C. Manufacturing Sector					
1. Shipbuilding & Repair	1	3,779	89.72	1203	4.82
2. Transport Equip.	1	8,700	87.83	571	2.34
3. Chemical & Allied Prod.	40	4,665	75.36	76	1.31
4. Petroleum Refining	20	1,385	56.37	112	1.61
5. Printing & Publishing	30	1,145	17.74	7	0.11
6. Apparel & Textile	224	1,889	31.14	25	0.30
7. Luggage, Repet. Tools	27	5,102	80.73	12	0.25
8. Full Finishes	100	1,561	34.25	91	1.1
9. Chemicals	140	1,548	26.23	10	0.14
10. Other Equip.	20	1,090	6.28	14	0.24
11. Glass Products	10	1,777	17.39	21	0.36
12. Other Manufacturing	200	1,232	6.90	3	0.05
Sub-total	680			454	2.65

T A B L E S

Table 1. The Economic Base of the Halifax Metropolitan Area, 1951

	1	2	3	4	5
Industry Group or Industry	Total Number Employed	Location Quotient ^a	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
A. Service Sector					
1. Defence Services	11139	11.519	91.32	10172	40.93
2. Health	2899	1.935	48.32	1401	5.64
3. Provincial & Municipal Gov't	1799	1.961	49.01	882	3.55
4. Other Federal Government	1890	1.849	45.92	868	3.49
5. Other Community & Business	2249	1.509	33.73	759	3.05
6. Personal Services	3462	1.154	13.34	462	1.86
7. Education	1691	1.207	17.15	290	1.17
Sub-total	25124			14834	59.69
B. Trade Sector					
1. Wholesale trade	4336	2.322	56.93	2468	9.93
2. Retail trade	7119	1.447	30.89	2199	8.80
Sub-total	11455			4667	18.73
C. Manufacturing Sector					
1. Shipbuilding & Repair	1362	9.779	89.77	1223	4.92
2. Confectionery	650	8.220	87.83	571	2.30
3. Canned & Cured Fish	653	4.000	75.00	490	1.97
4. Petroleum Refining	290	2.385	58.07	168	.68
5. Printing & Publishing	390	1.249	19.86	77	.31
6. Aircraft & Parts	239	1.459	31.46	75	.30
7. Cordage, Rope & Twine	77	5.182	80.70	62	.25
8. Malt Liquors	149	1.521	34.25	51	.21
9. Carbonated Beverages	140	1.544	35.23	49	.19
10. Commercial Printing	228	1.090	8.26	19	.08
11. Dairy Products (Misc.)	33	2.777	63.99	21	.08
12. Other Manufacturing	2752	.237	0.00	0	.00
Sub-total	6963			2806	11.29

Table 1 (contd.) The Economic Base of the Halifax Metropolitan Area, 1951

	1	2	3	4	5
Industry Group or Industry	Total Number Employed	Location Quotient	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
D. Other Sectors					
1. Transportation & Storage	5232	1.359	26.42	1382	5.56
2. Finance & Insurance	1899	1.381	27.59	524	2.11
3. Construction	3709	1.106	9.58	355	1.43
4. Electricity, Gas & Water	880	1.490	32.21	283	1.14
5. Primary Industries	243	.023	0.00	0	.00
Sub-total	11963			2544	10.24
Grand Total	55510			24851	100.00

Manufacturing Sector

1. Shipbuilding & Repair	621	6.981	35.48	532	2.99
2. Confectionery	527	10.441	30.42	477	2.88
3. Canned & Cured		5.369	31.37	486	2.57
4. Flour		4.992	27.04	73	.41
5. Malt Liquors		2.059	51.34	66	.37
6. Comical					
7. Printing	180	1.346	25.71	46	.26
8. Carbonated Beverages	104	1.794	44.26	45	.26
9. Dairy Products (Misc.)	33	4.331	77.92	26	.15
10. Other Foods	56	1.140	12.28	7	.04
11. Text. & Shoe					
12. Textiles	42	1.089	8.17	3	.02
13. Other Manufacturing	79	1.034	3.29	3	.02
Sub-total	1326	.180	0.00	6	.03
	3927			1729	9.77

Source: Figures in Column 1 are estimates derived from 1951 Census of Canada.

Table 2. The Economic Base of the City of Halifax, 1951

	1	2	3	4	5
Industry Group or Industry	Total Number Employed	Location Quotient	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
A. Service Sector					
1. Defence Services	6788	10.983	90.90	6170	34.72
2. Health	2206	2.303	56.58	1248	7.02
3. Personal Services	2646	1.380	27.54	729	4.10
4. Other Federal Government	1341	2.052	51.27	688	3.87
5. Education	1208	1.349	25.87	313	1.76
6. Other Services	3130	1.732	42.26	1323	7.44
Sub-total	17319			10471	58.91
B. Trade Sector					
1. Retail Trade	4806	1.529	34.60	1663	9.36
2. Wholesale Trade	2597	2.176	54.04	1403	7.89
Sub-total	7403			3066	17.25
C. Manufacturing Sector					
1. Shipbuilding & Repair	621	6.981	85.68	532	2.99
2. Confectionery	527	10.441	90.42	477	2.68
3. Canned & Cured Fish	561	5.369	81.37	456	2.57
4. Printing & Publishing	270	1.352	27.04	73	.41
5. Malt Liquors	128	2.055	51.34	66	.37
6. Commercial Printing	180	1.346	25.71	46	.26
7. Carbonated Beverages	104	1.794	44.26	46	.26
8. Dairy Products (Misc.)	33	4.333	77.92	26	.15
9. Other Foods	56	1.140	12.28	7	.04
10. Boot & Shoe Repair	42	1.089	8.17	3	.02
11. Custom Tailoring	79	1.034	3.29	3	.02
12. Other Manufacturing	1326	.180	0.00	0	.00
Sub-total	3927			1735	9.77

Table 2 (contd.) The Economic Base of the City of Halifax, 1951

	1	2	3	4	5
Industry Group or Industry	Total Number Employed	Location Quotient	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
D. Other Sectors					
1. Transportation & Storage	4012	1.631	38.39	1540	8.66
2. Finance & Insurance	1335	1.518	34.12	456	2.57
3. Electricity, Gas & Water	634	1.678	40.41	256	1.44
4. Construction	2392	1.116	10.39	249	1.40
5. Primary Industries	147	.021	0.00	0	.00
6. Not Stated	451	-	-	-	-
Sub-total	8971	1.609	40.79	2501	14.07
Grand Total	37620			17773	100.00
C. Manufacturing Sector					
1. Petroleum Refining	162	13.297	92.46	160	7.46
2. Aircraft & Parts	175	9.434	89.40	156	6.90
3. Chemicals, Soap & Tissue	41	24.818	95.97	39	1.74
4. Textile & Apparel	41	4.427	76.39	32	1.42
5. Other	1117	2.236	9.100	625	27.50

Source: Figures in Column 1 taken from 1951 Census of Canada.

Table 3. The Economic Base of the Town of Dartmouth, 1951

	1	2	3	4	5
Industry Group or Industry	Total Number Employed	Location Quotient	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
A. Service Sector					
1. Defence Services	969	8.925	88.80	860	38.27
2. Other Federal Government	183	1.594	37.26	68	3.03
3. Health	231	1.373	27.17	63	2.80
4. Education	161	1.022	2.15	3	.13
5. Other Services	585	1.064	6.02	35	1.56
Sub-total	2129			1029	45.79
B. Trade Sector					
1. Retail Trade	751	1.360	26.47	199	8.86
2. Wholesale Trade	354	1.689	40.79	144	6.41
Sub-total	1105			343	15.27
C. Manufacturing Sector					
1. Shipbuilding & Repair	247	15.798	93.67	231	10.28
2. Petroleum Refining	182	13.297	92.48	168	7.48
3. Aircraft & Parts	173	9.434	89.40	155	6.90
4. Cordage, Rope & Twine	41	24.818	95.97	39	1.74
5. Confectionery	41	4.627	78.39	32	1.42
6. Other Manufacturing	328	.236	0.00	0	.00
Sub-total	1012			625	27.82

Table 3 (contd.) The Economic Base of the Town of Dartmouth, 1951

Industry Group or Industry	1	2	3	4	5
	Total Number Employed	Location Quotient	Export Quotient (per cent)	Number Working for Export	Per cent of Total Working for Export
D. Other Sectors					
1. Transportation & Storage	569	1.316	24.01	137	6.10
2. Construction	439	1.166	14.24	63	2.80
3. Finance & Insurance	188	1.217	17.83	34	1.51
4. Electricity, Gas & Water	82	1.236	19.09	16	.71
5. Primary Industries	32	.027	0.00	0	.00
6. Not Stated	33	-	-	-	-
Sub-total	1343			250	11.12
Grand total	5589			2247	100.00

Source: Figures in Column 1 taken from 1951 Census of Canada.

Table 4. The Labour Force and its Percentage Distribution in Halifax City

1921, 1931, 1941 and 1951

Industry Group and Industry	1921		1931		1941		1951	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
All Industries	23063	100.00	23017	100.00	30825	100.00	37620	100.00
Agriculture, Forestry, Fishing and Mining	193	.84	230	1.00	200	.65	147	.39
Manufacturing	3876	16.80	2883	12.53	3854	12.50	3927	10.44
1. Food and beverages	700	3.04	1090	4.74	1012	3.28	1598	4.25
(a) Canned and cured fish	n.a.	-	139	.60	110	.36	561	1.49
(b) Confectionery	263	1.14	454	1.97	420	1.36	527	1.40
2. Printing, Publishing and Allied Industries	343	1.49	441	1.92	309	1.00	489	1.30
3. Transportation Equipment Shipbuilding and repairing	n.a.	-	449	1.95	1161	3.77	807	2.15
Electricity, Gas and Water	1112	4.82	375	1.63	873	2.83	621	1.65
Construction	37	.16	165	.72	287	.93	634	1.69
Transportation, Storage, Communication	2281	9.89	2131	9.26	1880	6.10	2392	6.36
1. Water transportation & services	3371	14.62	4049	17.59	4033	13.08	4012	10.67
Trade, Retail	1002	4.34	1781	7.74	1634	5.30	1393	3.70
Trade, Wholesale	4198	18.20	3200	13.90	3805	12.34	4806	12.78
Finance, Insurance and Real Estate	841	3.65	841	3.65	1659	5.38	2597	6.90
Service	708	3.07	866	3.76	950	3.08	1335	3.55
1. Personal	7006	30.38	7656	33.26	13810	44.80	17319	46.04
2. Government	2851	12.36	2864	12.44	3622	11.75	2646	7.03
(a) Defence services	2051	8.89	1854	8.05	7293	23.66	9508	25.27
(b) Other federal government	627	2.72	723	3.14	5171	16.78	6788	18.04
3. Community	n.a.	-	740	3.22	1308	4.24	1341	3.57
(a) Education	1086	4.71	1763	7.66	2640	8.56	4310	11.46
(b) Health	317	1.37	592	2.57	754	2.45	1208	3.21
Not stated	454	1.97	712	3.09	1238	4.02	2206	5.86
	1393	6.04	996	4.33	347	1.13	451	1.20
Total Population	58372		59275		70488		85589	
Percent of Population in Labour Force	39.51		38.83		43.73		43.95	

Source - Census of Canada: 1921 - Occupations, 10 years and over; 1931 - Industry, 10 years and over; 1941 and 1951 - Industry, 14 years and over. The manufacturing sub-classification was changed in 1951: earlier figures are grouped by 1951 classification.

Table 5. The Labour Force and its Percentage Distribution in Dartmouth

1941 and 1951

Industry Group and Industry	1941		1951	
	Number	Per cent	Number	Percent
All Industries	4246	100.00	5589	100.00
Agriculture, Forestry, Fishing and Mining	26	.61	32	.57
Manufacturing	866	20.40	1012	18.11
1. Food and beverages	93	2.19	102	1.83
(a) Confectionery	37	.87	41	.73
2. Printing, Publishing and Allied Industries	40	.94	66	1.18
3. Transportation Equipment	360	8.48	458	8.19
(a) Aircraft and parts	4	.09	173	3.10
(b) Shipbuilding and Repairing	283	6.67	247	4.42
4. Textile products (except clothing)	47	1.11	43	.77
(a) Cordage, rope, and twine	44	1.04	41	.73
5. Petroleum refining and products	127	2.99	182	3.26
Electricity, Gas and Water	21	.49	82	1.47
Construction	352	8.29	439	7.85
Transportation, Storage, Communication	455	10.72	569	10.18
(1) Water Transportation and Services	229	5.39	243	4.35
Trade, Retail	513	12.08	751	13.44
Trade, Wholesale	164	3.86	354	6.33
Finance, Insurance and Real Estate	87	2.05	188	3.36
Service	1692	39.85	2129	38.09
(1) Personal	328	7.72	272	4.87
(2) Government	1051	24.75	1299	23.24
(a) Defence Services	825	19.43	969	17.34
(b) Other federal government	146	3.44	183	3.27
(3) Community	285	6.71	447	8.00
(a) Education	95	2.24	161	2.88
(b) Health	155	3.65	231	4.13
Not Stated	70	1.65	33	.59
Total Population	10847		15037	
Percent of Population in Labour Force	39.14		37.17	

Source: See Table 4

Table 6. Population of Canada, Nova Scotia, and the Halifax Area, 1931-1956

AREA	1931	1941	1951	1956
Canada	10376786	11506655	14009429	16080791
Nova Scotia	512846	577962	642584	694717
Halifax County	100204	122656	162217	197943
Metropolitan Area	n.a.	98636	133931	164200
Halifax City	59275	70488	85589	93301
Dartmouth	9100	10847	15037	21093
Herring Cove & Spryfield	n.a.	3497	8415	11516
Armdale & Fairview	n.a.	3578	5386	7852
Rockingham & Bedford	n.a.	2246	3666	4726
Dartmouth Lakes	n.a.	3497	8231	15206
Cole Harbour & Eastern Passage	n.a.	2081	4747	6443
Woodside & Imperoyal	n.a.	2392	2858	4061
Indian Reserves	n.a.	10	2	2
Other Community & Business Services				

Note: n.a. - not available

Source - Census of Canada, 1931, 1941, 1951 and 1956

Table 7. Distribution of the Labour Force of the Halifax Metropolitan Area, 1959 and 1980, on Certain Assumptions.

	1959	1980	Percentage Increase
Total Population	170000	300000	76.5
Total Labour Force	70568	124553	76.5
Defence Services	16000	16000	0.0
Wholesale Trade	5208	10239	96.6
Transportation, Storage, Communication	5932	11662	96.6
Health	3680	7699	109.2
Retail Trade	9456	18590	96.6
Finance, Insurance and Real Estate	2328	4577	96.6
Other Federal Government	2398	5017	109.2
Personal Service	4847	9529	96.6
Electricity, Gas and Water	1232	2577	109.2
Construction	2582	4273	65.5
Primary Industries	243	447	84.0
Other Municipal & Provincial Government	2283	4776	109.2
Education	2146	4489	109.2
Other Community & Business Services	2854	5611	96.6
Manufacturing	9379	19067	103.3
Population (Nova Scotia)	716000	910000	27.1
Population (Atlantic Provinces)	1857000	2360000	27.1
Population (Canada)	17442000	26650000	52.8
Secondary Manufacturing (Canada)			67.2

Source: - Distribution of the 1959 Metropolitan Labour Force was estimated. Percentage increases from 1959 to 1980 calculated from Hood and Scott, op.cit., pp. 180 and 316. 1959 population estimates from National Accounts, Income and Expenditure, 1959, Ottawa, 1960.

The Theory of Regional Economic Growth and of the Urban Economic Base
in chronological order:

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- I. Metzler, "A Multiple-Region Theory of Income and Cost", Econometrica, 1933.
- J. S. Siegel, "Forecasting the Population of South Area", Land Economics, February 1933.
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