A STRUCTURAL ANALYSIS OF QUEBEC ECONOMIC GROWTH: 1931-1964

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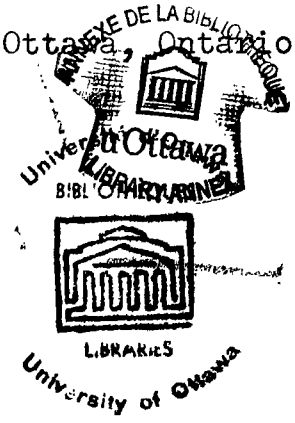

OUTLINE

Canada has since the spring of 1961 experienced a period of continuous growth in total and per capita income. The ten provinces have been higher in some parts than in others; after these five years of rapid expansion, Quebec and the Atlantic Region have ended with a relatively greater concentration of overall Canadian unemployment than when the expansion began.

This paper aims at explaining some of the factors contributing to the income disparity between the different regions of the country. More specifically the analysis concerns itself with Quebec and Ontario and with the structural differences between these two provinces.

It was believed that a structural approach would facilitated the understanding of the difficulties faced by Quebec in the course of its past development and this is explained at length in the Introduction. Chapter II sets the examination into a broader perspective of a comparative description of economic growth in Quebec with that of Ontario and Canada as a whole. Chapter III underlines the economic implications of the structural differences between Quebec and Ontario.

Finally the Conclusion summarizes the facts revealed by the analysis and presents the policy implications.

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INTRODUCTION

CHAPTER I

1. Structural Approach

Economic growth is the common term used to describe quantitatively as well as qualitatively the process by which per capita real income is increased over a sustained period of time. This latter process remains a phenomenon not fully understood and a general theory of economic growth has not been developed as yet. Nevertheless, partial explanations or theories are numerous and since the publication of The General Theory of Employment, Interest and Money, models based on dynamic concepts have been the main avenue to the study of the growth process, e.g. Harrod', Domar', Kurihara' and Brown's analyses.(1)

A general approach could be used to study Quebec's economic growth within a macroeconomic framework. However, it is not certain if such analytical framework would throw adequate light on the difficulties faced by the Province of Quebec in the course of its past development. In other words, would a model using data on saving, investment and productivity, be sufficient to explain why real income per

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(1) - R. F. Harrod, Toward a Dynamic Economics, Macmillan, London, 1952.
- E. D. Domar, Essays in the Theory of Economic Growth, Oxford University Press, Fair Lawn, N.J., 1957.
- K. K. Kurihara, National Income and Economic Growth, Rand and McNally, Chicago, 1961.
- T. M. Brown, Canadian Economic Growth, The Royal Commission on Health Services, Queen's Printer, Ottawa, 1964.

capita has always been lower in Quebec than Ontario? Could a comparative macroeconomic study of growth in Quebec and in Ontario explain the differences that exist (or are believed to exist) between the economies of these two provinces?

Mr. André Raynauld, in his pioneering book Croissance et Structure économiques de la Province de Québec(2) believes that what is peculiar to Quebec's past economic growth could not be properly analyzed in a model of Domar's type. Mr. Raynauld suggested that a structural approach would be preferable. This suggestion has been made before by other Canadian economists. In the book Essais sur le Québec Contemporain(3), Mr. M. Lamontagne and Mr. Faucher share Mr. Raynauld's view.

In the same book, Prof. O. J. Firestone mentions that the divergencies in per capita real income between Quebec and Ontario could probably be explained if we knew more about the economic impact of the changing structure of Quebec's industries. Also mentioned in this book is the "possible" relationship between the slower rate of growth of per capita income of Quebec, and the pattern of investment in the Province(4).

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(2) - A. Raynauld, Croissance et Structure économique de la Province de Québec, Ministère de l'Industrie et du Commerce, Québec, 1961, p. 30.
(3) - J. C. Falardeau, ed., Essais sur le Québec Contemporain, Presses Universitaires Laval, Québec, 1953, pp. 33-36.
(4) - Ibid., p. 35.

Some other writers have also indicated that there is a relationship between the direction of the investment flows and the rate of growth. Among the latter, Norman Kaplan, in a recent analysis(5) of Soviet and American growth rates, found that it is probably the direction rather than the scale of Soviet investments which determines its higher industrial growth rate. Changes in the rate of growth of real income per capita would also be related to changes in the character (or structure) of investment from one period to another.

To summarize: the reasons that justify the use of a structural approach in this analysis of Quebec's economic growth are the following:

(1) A comparative analysis of the changes that have occurred in the economic structure of Quebec and Ontario could explain the divergencies between each province's rate of economic growth.

(2) A detailed comparison between the economic structures of Quebec and Ontario over a period would make it possible to establish to what extent the structural factors have been and still are responsible, at least

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(5) - N. M. Kaplan, "Capital Formation and Allocation", Soviet Economic Growth, A. Bergson, ed., Row, Paterson and Co., White Plains, N.Y., 1953, p. 80.

in part, for Quebec's lower per capita real income as compared to Ontario.

(3) An analysis of the changing relative importance of each industry could be used as a starting point for a study of the "economic growth" contribution of shifts in Quebec's industrial structure.

(4) A study on the relative importance of each industry could be combined with an input-output and a capital-output ratio analysis in order to establish what are the "leading industries" in Quebec.

2. Economic Structure Defined

Among the contemporary contributions to the structure analysis of the process of economic growth, Colin Clark's and Allen G. B. Fisher's are of a pioneering nature. The definition they have given of the concept of "economic structure" is still accepted today. Both Clark and Fisher have viewed the economic structure as composed of the three industrial sectors - primary, secondary and tertiary - in which products originate. According to Clark:

> Primary industries are defined as agriculture, forestry and fishing; secondary industries as manufacturing, mining and building; the tertiary

> industries include commerce, transport, services and other economic activities. (6)

Fisher's definition of the concept of "sector" differs from Clark's in the sense that he has marked off sectors on the basis of the structure of consumer's demand rather than on the basis of the productivity of each industry. As explained by Martin Wolfe:

> For Fisher the primary sector consists of industries producing goods most essential for sustaining life; the secondary includes all manufacturing activity designed to produce things for which there is a more or less standardized demand, but which could not strictly be described as essentials; the tertiary is the remainder, which can be described also as every new or relatively new type of consumers' demand. (7)

More recently, the concept of economic structure has been given a broader definition. By economic structure Simon Kuznets(8) implies the structure of a nation's product or income, the components of which can be stated as:

(1) the industrial sectors in which products originate;

(2) the income streams - wages, salaries entrepreneurial income, dividends, interest, and so forth - that flow to

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(6) - Colin Clark, The Conditions of Economic Progress, Macmillan, London, 1940, p. 7.
(7) - Martin Wolfe, "The Concept of Economic Sectors", The Quarterly Journal of Economics, Volume 69, August 1955, p. 409.
(8) - S. Kuznets, Economic Growth and Structure, W. W. Norton and Co., New York, 1965, pp. 23-24.

the several productive factors engaged (labour, property and enterprise);

(3) the origin of income in economic entities with different forms of organization - individual firms, ordinary business corporations, public utility corporations, non-business corporations and governments;

(4) the allocation of income payments among recipients grouped either by the size of income, by occupation or according to institutionally distinguishable social groups;

(5) the distribution of national product between flow into consumption and capital formation;

(6) the distinction between products originating and retained at home and the inflows and outflows across the nation's boundaries.

The concept of "economic structure" also refers sometimes to certain basic relationships such as the capital output and/or capital-labour ratios. It will be said that the structure of an economy differs from another one by the fact that in the former the capital-output ratio is higher

than in the latter. Changes in the structure of investment often refer to changes in the distribution of investment among industries. In other contexts, the expression "economic structure" is used in a broader sense meaning everything from the age distribution of a population, to its rural and urban distribution, the composition of output, the allocation of labour and other inputs amongst sectors, the labour force participation rate, etc. An exhaustive analysis of economic changes, approached through a structural framework would have to describe and explain all the components of the structure taken in its broadest meaning. But a simpler model facilitates the analysis. Theories explaining changes in economic structure can more effectively be tested on the basis of a study of population and capital, employment and product shares by industry or by sector.

3. Structural Analysis Defined

A structural analysis of the process of economic growth usually includes an historical study of the various components of a nation's product and income flows. Emphasis is placed on the changing character of the rural-urban structure of the population, on the employment shifts among industries, and on the changes that occur in the production and distribution mechanism and in the type of organization. The causes of the changes are analyzed and a critical assessment of the latter's welfare and economic growth implications is attempted.

A study of the industrial structure of an economy could be conducted in conjunction with an inter-industry flow analysis in order to discover whether the structural changes that are occurring are in the right direction in terms of their demand creating effects. In other words, are the industries that are growing at the fastest rate, those industries that by their growth induce the highest increases in demand for the products of the other productive sectors?

Finally, a structural analysis of the process of economic growth could also be an endeavour to trace certain basic historical patterns that would be common to all processes of development. In such an analysis the structure, i.e. the industries in which products originate, is subdivided into "sectors" according to certain economic (e.g. nature of demand) and/or technical and supply considerations. The industrial structure of the country studied is compared over time and the relative importance of each sector is used to indicate the stage at which the country has arrived in the course of its economic development. Such a type of structural analysis, which is more appropriately described as a sectoral analysis, has been used in the past to assess the conditions of economic progress.

4. Summary of the Structural Approach to the Study of Economic Growth

Up to now the structural analysis undertaken by economists were mostly of the sectoral type, i.e. the study

of the changing relative importance of each of the industrial sectors in which products originate. By postulating the existence of "sectors", the pioneers in the field of structural economic analysis implied that the industrial structure of a country could be divided into groups of industries or homogeneous sectors that exhibit significantly different characteristics.

The economy was divided into "primary", "secondary" and "tertiary" sectors, and each of these three sectors were supposed to show meaningful differences in relative employment, output and productivity rates, and in the structure of demand for their products throughout the process of economic development. The relative importance of each of these three broad sectors came to be used as a basis for comparing developed and developing economies. The latter type of economies were expected to undergo an economic metamorphosis of prescribed stages: a decline in the number of workers in agriculture, a rising percentage in manufacturing employment which, when it had reached a certain level was to become more stable, followed by a rising percentage in the service (or tertiary) industries. As a result, many economists came to consider the whole process of sectoral shift as a source of economic growth and to identify agriculture with backwardness and industry with prosperity.(9)

(9) - Martin Wolfe, "The Concept of Economic Sectors", The Quarterly Journal of Economics, Volume 69, August 1955, p. 409.

Originally, as can be found in the first edition of The Conditions of Economic Progress, the argument was that:

> ... Low real income per head is always associated with a low proportion of the working population engaged in tertiary production and a high percentage in primary production ... A high average level of real income per head is always associated with a high proportion of the working population in tertiary industries. (Primary industries are defined as agriculture, forestry and fishing; secondary industries as manufacturing, mining and building; the tertiary industries include commerce, transport, services and other economic activities.) The reasons for this growth of the relative number of tertiary producers must largely be sought on the demand side. As incomes rise the demand for such services increases, and being non-transportable they must be supplied by workers within the country concerned ... Generally speaking, the main dynamic of economic advance has been rising income per head in either secondary or tertiary industry, often in both and the transfer of population away from primary industry.(10)

Fisher's basic concept parallels that of Clark in many respects. The following passages illustrate this similarity of views between these two authors:

> During recent years improvements in productive methods have certainly been important in practically every field of economic activity and the natural, indeed the inevitable result of such improvements is to let loose an increasing proportion of human energy and of capital equipment for the production of "tertiary" goods ... As productive efficiency increases, it is inevitable if the demands of consumers are to remain the controlling power, that the character of the goods produced will change at the same time. And with the change in the character of production, the distribution of labour among various types of work and the character of capital

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(10) - Colin Clark, The Conditions of Economic Progress, 1st edition, Macmillan, London, 1940, pp. 7, 12.

demand are certain also to change.(11)

> The shifts of employment towards secondary and tertiary production revealed by the census are the inescapable reflection of economic progress.(12)

According to Fisher then, it is the combined effect of rising income and rising productivity that explains the changing relative importance of each sector. Rising productivity in both the primary and secondary industries releases resources, and rising income induced people to shift their demand to other "new" goods which are all considered by Fisher as "less essential" and as belonging to the tertiary group.

Fisher thought that the continuous growth of the tertiary sector could sustain economic progress. He even urged governments to encourage, through subsidies, changes in the structure of production by constant transfer of resources from the primary and secondary to the tertiary sector.(13)

Jean Fourastié, in various articles and books, expressed similar ideas on the economic growth contribution of the growing importance of the tertiary sector. His explanations of the changes that occur in the relative importance of each sector in terms of their respective share

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(11) - A. G. B. Fisher, "Capital and the Growth of Knowledge", The Economic Journal, Volume 43, September 1933, pp. 384, 389.

(12) - A. G. B. Fisher, Economic Progress and Social Security, Macmillan, London, 1938, pp. 6-7.

(13) - A. G. B. Fisher, "The Economic Implications of Material Progress", International Labor Review, July 1935, pp. 5, 6.

of labour is also very akin to Clark's and Fisher's. He mentions that both technical factors (e.g. increases in productivity) and changing demand patterns have an impact on the apportionment of labour among industries. But instead of demarcating the sectors on the basis of the structure of consumers' demand, i.e. in terms of the urgency of their needs, as Clark and Fisher had done before him, Fourastié divides the economy using "productivity" criteria. He applies the term "tertiary" to activities that have enjoyed great technical progress, reserving the term primary for agricultural activities and the term secondary for non-agricultural activities.(14)

According to Martin Wolfe the sectors can be distinguished from one another by the fact that characteristic industries in each are dominated by a different rate of increasing productivity. Accordingly he reformulated Fourastié's concept of sector and defined the primary sector as that group of industries in which an increase in productivity in terms of goods and services per man-hour is limited by natural growth factors; the productivity of the secondary sector is limited by mechanical factors, and that of the tertiary, by relatively unaided human skills.(15) This

(14) - Jean Fourastié, Machinisme et bien-être, Editions de Minuit, Paris, 1951, p. 124.

(15) - Martin Wolfe, "The Concept of Economic Sectors", The Quarterly Journal of Economics, Volume 69, August 1955, p. 406.

reformulation of the concept of economic sectors leaves the general "sectoral" theory unchanged, the latter being that there is a mutual interrelationship between economic growth and structural (or sectoral) changes.

5. Structural Changes: A Disaggregated Sectoral Analysis

Recently the validity of the above-mentioned sectoral theory has been challenged by a number of economists. Bauer and Yamey wrote an article,(16) the chief purpose of which was to show that Clark's and Fisher's conclusions, particularly as regards the association of low proportions of labour in service (tertiary) activities with low per capita income, do not apply to the situation in many of the presently underdeveloped countries, and particularly to British West Africa. Richard Holton argued the same point but in reference to Puerto Rico.(17)

These authors maintain that an economy does not necessarily go through "stages" in the sense that those workers driven away from agriculture must find employment in manufacturing. It is only later, when the economy reaches a more advanced stage that workers move to the tertiary sector.

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(16) - P. T. Bauer and P. S. Yamey, "Economic Progress and Occupational Distribution", The Economic Journal, Volume 61, December 1951, pp. 741-755.

(17) - Richard H. Holton, "Marketing Structure and Economic Development", The Quarterly Journal of Economics, Volume 67, August 1953, pp. 344-361.

Bauer and Yamey point out that in West Africa the initial "take-off" brought about an immediate upsurge in trade and in distribution which are tertiary occupations characterized by low productivity, rather than in manufacturing. Then the structural changes that occurred there, resulted in mis-allocation of resources, and not in greater economic progress.

Even if the process of sectoral shifts takes place as suggested by Clark and Fisher, i.e. from the primary to the secondary, and then to the tertiary sector, it does not necessarily mean that such shifts result in increased average productivity and greater economic welfare. As pointed out by Bauer and Yamey,(18) there is a problem of aggregation involved. It must be kept in mind that the tertiary production, as it is usually understood, comprises a heterogeneous collection of different services which are performed at varying degrees of efficiency. It makes a lot of difference in terms of productivity increase if it is the "personal services" industry that is attracting an increasing number of workers, while other more "productive" tertiary occupations (e.g., commercial services or transportation) remain stationary or become relatively less important.

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(18) - P. T. Bauer and B. S. Yamey, op.cit., p. 748.

Whatever their limitations, Clark's and Fisher's analyses are in conformity with what actually occurred in certain countries. Perloff mentions(19) that the economic development of the United States has been characterized by shifts in the labour force which Clark's description of the pattern of economic growth would lead us to expect.(20) Perloff also indicates that the sector theory is descriptive in a broad way of the relationship between the level of income of the various states and the proportion of gainfully occupied population engaged in the different economic sectors.

It seems, therefore, to Perloff that the economic sector concept - with its focus on sector productivity and structure of demand - does provide a useful frame of reference for certain types of analyses concerned with the level and growth of an area's income. But he goes on to say that:

> ...many pitfalls can be avoided, and the usefulness of the concept greatly enhanced by a certain amount of disaggregation and refinement. Such disaggregation and refinement are particularly pertinent in analyzing the relationships of income and industrial structure ... and employment structure.(21)

It is this type of disaggregated sectoral analysis that has become the main avenue for studying economic growth

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(19) - H. S. Perloff, "Interrelations of State Income and Industrial Structure", The Review of Economics and Statistics, Volume 39, May 1957, p. 163.

(20) - As it will be seen later, this is also true for Quebec. See Chapter III.

(21) - H. S. Perloff, op.cit., p. 162.

through structural changes.[22] The same technique is used in this M.A. dissertation.

The approach is to examine historical trends and changes in the industrial structure of the provinces of Quebec and Ontario for the period 1931 to 1964. Criteria chosen for analysis are the rates of growth of employment, output, earnings and productivity. The analysis covers thirteen main economic sectors and twenty sub-sectors of the manufacturing group. It is believed that such a disaggregated approach assists: (a) in analyzing the "economic growth" contribution of the changes that have occurred in Quebec's industrial structure since 1931, and (b) in finding out to what extent the differences between the industrial employment structure of Quebec as compared to Ontario are responsible for Quebec's lower level of average earnings. Finally, the structural analysis of the two provinces is made in a broad perspective of the economic growth in Canada as a whole, as well as in its two largest provinces. (See Chapter II).

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(22) - The literature on the subject includes:
- H. S. Perloff, E. S. Dunn, E. E. Lampard, and R. F. Muth, Regions, Resources, and Economic Growth, The John Hopkins Press, Baltimore, 1960.
- A. Raynauld, Croissance et Structures économiques de la Province de Québec, Ministère de l'Industrie et du Commerce, Québec, 1961.
- E. F. Denison, The Sources of Economic Growth in the United States and the Alternatives before Us, Committee for Economic Development, New York, 1962.

6. The Geographical Unit in Regional Economic Analysis

In this analysis, the provinces of Quebec and Ontario are treated as separate and single regional economic entities. The acceptance of Quebec as an economic region can be justified on the ground of the political and social particularities of that Province as well as by the objectives of the present analysis. Due to the ambiguities of the concept of a "region" and to the inherent limitations of the regional approach, some brief comments on the concept of an economic region are indicated.

The problem of setting boundaries for regional economic analysis is a complex one. Some rules have been established, and in setting the issue reference can be made to these generally accepted principles.(23) The delineation of regions involves several main criteria. Boundaries may be set up in defining a region by the likeness of its component characteristics or by the presence of a nucleus or area of influence. The first of these two principles is called the "homogeneity" principle, and the other is known as the "functional integration" principle.

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(23) - The reference literature on the subject includes the works of the following writers:
- National Bureau of Economic Research, Regional Income, Conference on Research on Income and Wealth, Volume 21, Princeton, 1957.
- H. S. Perloff, E. S. Dunn, E. E. Lampard, and R. F. Muth, Regions, Resources and Economic Growth, John Hopkins Press, Baltimore, 1960.
- W. Isard, Methods of Regional Analysis, Technology Press and Wiley and Sons, New York, 1960.

An area may be said to be homogeneous if it is alike in a single characteristic or in a group of characteristics. It may be alike in some and different in others, but the similarities in the characteristics and trends must outweigh the differences. In February 1955, the U.S. Department of Commerce's Regional Classification Committee used the following nine indices of homogeneity in establishing its regional division of the American economy:

1. Per capita income, 1951.
2. Percentage urban, 1950.
3. Percentage income from manufacturing, 1951.
4. Percentage income from agriculture, 1951.
5. Percentage income, Indian and White with Spanish surname, 1950.
6. Telephone per 1000 population, 1950.
7. Infant deaths per 1000 live births, 1949.
8. Net migration, 1949-1950, as percentage of 1950 population.
9. Percentage change in total income, 1929-1951.

This homogeneity principle is a useful one though it is subject to certain limitations. The use of this principle to set regional boundaries requires that the various parts of the country that share certain economic (and/or non-economic) characteristics be grouped under the same region. But since the latter change over time, the use of

"homogeneity" criterion necessitates that any regional delineation be revised from time to time. Perloff mentions that what is "called for is a modification of the usual homogeneity principle."(24) According to him, by assessing the changing relative status of the various regions of a country, the demarcation of regions itself must be taken as an analytical variable.

The second principle of regional delineation requires that a region comprises all the area that is organized around a centralizing node or nucleus and operates as a unit. In other words, in delimitating regional boundaries, the various existing "nodal regions" or "leading industries" must be taken into account.

A nodal region might be a market center, a source of supply of a wide variety of goods and services or an avenue of access to other nodal points. A metropolitan area, with its suburbs and broad hinterland, typifies a nodal region. It is to this concept of the nodal region that Isard and Freutel were referring when they mentioned that the appropriate criterion for regional demarcation should be "internal interdependence of income, as revealed through flow phenomena."(25) Income and product flows within the

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(24) - H. S. Perloff, "Assessing Regional Progress", Regional Income, Conference on Research on Income and Wealth, Volume 21, Princeton, 1957, p. 39.

(25) - W. Isard and G. Freutel, "Regional and National Product Projections, Long Range Economic Projection, Studies in Income and Wealth, National Bureau of Economic Research. Princeton. 1954. p. 456.

boundaries of the nodal area have to be more important than flows with the rest of the country for this area to be considered as a distinct regional economic entity.

The question that now arises is whether the Province of Quebec, on the basis of the above-mentioned principles, can be taken as a distinct economic region. Pierre Harvey believes that this would be justified. He maintains that:

> Ontario's economy differs extremely from that of Quebec; and Quebec itself is more than just one of the ten political subdivisions of Canada, it is also an economic region with marked characteristics.(26)

Harvey is aware that Quebec fits only partially the concept of an economic region when the latter is defined as an area within which economic activities are at once original and closely integrated around a core of some sort. But, since Quebec's unemployment problems and the nature of its labour force(27) are different of those of Ontario, it is acceptable to treat Quebec as an economic region distinct from Ontario.

Also it can be argued that while homogeneity and functional integration are basic criteria in the delineation

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(26) - P. Harvey, "The Economy of Quebec", The University of Toronto Quarterly, April 1958, p. 330.

(27) - A. Raynauld mentions that labour in Quebec is less mobile than in Ontario; op.cit., p. 33.

of areas, a number of other factors have to be taken into account. The latter includes the area of group consciousness, i.e. the areal extent of the "we" when the question "how well are we making?" is asked.(28) And on the basis of this "group consciousness" criterion it is justifiable to refer to the Province of Quebec as a single economic region. This view is expressed by Camu, Weeks, and Sametz, when they mention that "in the delineation of zones and regions, allowances must be made for political boundaries and administrative and socio-historical realities.(29)

Finally, the nature and purpose of this analysis justify us to refer to Quebec (and Ontario) as a region. As pointed out by the three authors mentioned above, while there must be a theoretical concept underlying any regional delineation, the first condition for such economic zoning must be usefulness and utility. "The region must be useful as a basis for estimating the impact of changing economic conditions (involving both domestic and foreign factors), for interpreting economic conditions, for dealing with current problems, and so forth."(30) Therefore, it is not only justifiable to consider Quebec as being a single and distinct economic region on the ground of the political, social and

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(28) - H. S. Perloff, op.cit., p. 39.
(29) - P. Camu, E. P. Weeks and Z. W. Sametz, Economic Geography in Canada, Macmillan and Co., Toronto, 1964, p. 263.
(30) - Ibid., p. 265.

economic considerations discussed above, it is desirable to do so because such an approach reveals the particularities of Quebec's economic growth. Through a comparative analysis, it will be possible to discover to what extent structural changes differ between Quebec and Ontario and what have been the economic growth implications of such divergencies.

CHAPTER II

1. Economic Growth in Perspective

Since 1931 the economic growth of Quebec has followed a somewhat irregular path and produced anomalous results. The Province of Quebec has undergone a rapid economic growth over the last three decades and particularly since the end of World War II. But this growth has been uneven, at times rapid, at times slow, at times coming to a halt, as Quebec, together with other parts of Canada, for a temporary period felt the impact of recession or depression.

However, over the longer term, in spite of heavy industrialization and rapid economic growth, the Province of Quebec was not able to offer to its people as high a level of real income and standard of living as most other parts of Canada have been able to do for their people. Quebec even though it is the second most industrialized Province of Canada - on the basis of the volume of industrial output(1) and the number of workers employed in manufacturing(2) - ranks sixth in personal income per capita(3) and in manufacturing productivity.(4)

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(1) - Dominion Bureau of Statistics, Survey of Production 1963, Queen's Printer, Ottawa, 1960, p. 11.
(2) - Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section c, Province of Quebec, 1963, Queen's Printer, Ottawa, 1966, p. 12.
(3) - Dominion Bureau of Statistics, National Accounts Income and Expenditures 1964, Queen's Printer, Ottawa, 1965, p. 36.
(4) - Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section c, Province of Quebec 1963, Queen's Printer, Ottawa, 1966, p. 12.

An explanation of the anomalies mentioned above based on an analysis of structural differences, can be facilitated by setting the examination into a broader perspective of a comparative description of economic growth in Quebec with that of Ontario and Canada as a whole. This can be done by tracing the key indices of growtn in both its volume and welfare aspects over the period under study. Changes in volume are measured in terms of variation in total production, income, population, labour force and employment. Changes associated with economic welfare are those related to changes in per capita real income.

To facilitate the analysis presented in this study, use was made of a model. This model tells what indices (of growth) or what aggregates to trace back, and in what order they should be presented.

An economic growth model can be of a "demand" or of a "supply" type. The demand approach consists of studying the determinants of total demand (i.e. consumption, and private and public investment) as well as the causes and results of a growing demand. The supply approach consists of analyzing how output is created physically (or technically), and how it is increased in time. In this perspective analysis of Quebec's economic growth, the supply approach is followed. It was decided to use the latter approach because the main purpose of this dissertation is to explain in structural terms why the end result of economic activity,

i.e. real income per capita, is lower in Quebec than in Ontario.

Income and production originate from man's efforts to utilize and transform his material environment. In other words, income and production (or economic growth) are "the resultant of human effort in making use of the productive capabilities of a nation."(5)

Economic growth is due to a variety of causes. Firstly, it comes from development, i.e. from the transfer of workers and capital from low to high productivity industries. Secondly, growth can be the result of an expanding population. As long as the labour force participation rate and the age structure remain the same, and as long as the marginal productivity of workers is greater than zero(6), a growing population will tend to create an increase in Gross National Product. Growth will also occur if the labour force participation rate, or the employment rate of the labour force, or the annual hours of work increase.

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(5) - O. J. Firestone, Broadcasting and Economic Growth, address to the Canadian Broadcast Executive Society, Toronto, Park Plaza Hotel, October 1966, p. 3.

(6) - As mentioned by T. M. Brown, (Canada Economic Growth, a study prepared for the Royal Commission on Health Services, Queen's Printer, Ottawa, 1965, p. 16) the marginal productivity of workers will be greater than zero if the labour force is in appropriate proportions to the available natural resources and capital equipment. Therefore with population growing, the natural resources and capital bases will have to be widened if growth is to be maintained.

Another major source of growth in G.N.P. is increased in average productivity. To quote Brown:

> This growth arises from steady accretion of advances and improvements in education, workers' skills, managerial skills, and administration; and from the myriad of lesser scientific and technological discoveries, inventions and minor innovations.(7)

In summary, the supply approach to the theory of economic growth consists of explaining the growth of production and income by referring to key variables which in this thesis are taken to include population, labour force, employment and productivity.

(a) The Growth of Population, Labour Force, Employment and Productivity

The growth of population, in any country that has passed the stage of take-off, is a direct stimulus to the growth of its production. A growing population assures the increasing number of consumers required to absorb the increasing quantity of goods and services produced, as well as the increasing number of workers necessary to produce this increasing amount of output. The economic growth stimulated by Quebec's population is often explained by the latter "stability and industriousness". A better index of the role played by Quebec's population in that province's economic growth, is the rate at which it has increased since 1931.

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(7) - T. M. Brown, op.cit., p. 18.

As Tables 1 and 3 indicate, the population of Quebec has increased by 2,687,000 between 1931 and 1964, from 2,875,000 to 5,562,000. This increase corresponds to an annual compound rate of 2.02 per cent. The population has been increasing more rapidly at the end of the 1931-1964 period than at the beginning. The percentage rates of increase for the periods 1931-1941, 1941-1951, 1951-1961 and 1961-1964 are 15.9, 21.7, 29.7 and 5.8 respectively. This acceleration of the rate at which population was increasing between 1931 and 1964, as well as the levelling off of this trend at the very end of the period 1931-1964, reflects the movements in birth and death rates since 1931 in the Province of Quebec.

Table 2 shows that the average crude birth rate for the period 1931-1935 and the period 1936-1940 was 26.6 and 24.6 respectively. During the periods 1946-1950, 1951-1955, 1956-1960 and 1961-1964, the average crude birth rate was 30.4, 30.0, 28.6 and 24.8 respectively. During the entire period 1931-1964, the death rate has been continuously declining. This rate was 11.0 between 1931 and 1935, and has decreased to 6.9 between 1961 and 1964. Net migration was also higher toward the end of the period 1931-1964. Indeed, as can be seen in Table 3, net migration was negative before 1951, and the growth of population in Quebec up to 1951 remained essentially a domestically induced phenomenon. Between 1951 and 1964, net

TABLE 1

TOTAL POPULATION AND PERCENTAGE INCREASE FOR EACH PERIOD, CANADA, QUEBEC, AND ONTARIO, 1931-1964
(Population in Thousands)

	1931		1941		1951		1961		1964		Rate of Increase 1931-1964
	Total	Per Cent Change	Total	Per Cent Change	Total	Per Cent Change	Total	Per Cent Change	Total	Per Cent Change	
Canada(a)	10,377	18.1	11,507	10.9	14,009	21.8	18,238	30.2	19,235	5.5	1.99
Quebec	2,875	21.8	3,332	15.9	4,056	21.7	5,259	29.7	5,562	5.8	2.02
Ontario	3,432	17.1	3,788	10.4	4,598	21.4	6,236	35.6	6,586	5.6	1.99

SOURCE: -Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1963, Vol. VII, Bulletin 7.1-1, pp. 1-2.
-Dominion Bureau of Statistics, Vital Statistics 1964, Queen's Printer, Ottawa, 1966, p. 46.

(a) Including Newfoundland.

TABLE 2

BIRTH, DEATH, AND NATURAL INCREASE RATES, BY SELECTED FIVE-YEAR PERIODS, CANADA, QUEBEC AND ONTARIO, 1931-1964

	Births	Deaths	Natural Increase
		CANADA[a]	
1931-35	21.6	9.8	11.7
1936-40	20.7	9.9	10.8
1941-45	23.7	9.8	13.9
1946-50	27.6	9.3	18.3
1951-55	28.0	8.5	19.5
1956-60	27.5	8.0	19.5
1961-64	24.9	7.7	17.2
		QUEBEC	
1931-35	26.6	11.0	15.6
1936-40	24.6	10.4	14.2
1941-45	28.4	9.9	18.5
1946-50	30.4	8.9	21.5
1951-55	30.0	8.0	22.0
1956-60	28.6	7.3	21.3
1961-64	24.8	6.9	17.9
		ONTARIO	
1931-35	18.5	10.2	8.3
1936-40	17.5	10.3	7.2
1941-45	19.9	10.2	9.7
1946-50	24.6	9.9	14.7
1951-55	26.1	9.1	17.0
1956-60	26.4	8.5	17.8
1961-64	24.3	8.2	16.1

SOURCE: -Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1963, Vol. VII, Bulletin 7.1-1, pp. 5-6.
-Dominion Bureau of Statistics, Vital Statistics 1964, Queen's Printer, Ottawa, 1966, p. 68.

(a) Excluding Yukon and Northwest Territories.

TABLE 3

FACTORS IN THE GROWTH OF POPULATION OF CANADA, QUEBEC, AND ONTARIO, 1931-1964
(Population in Thousands)

	Population Increase		Natural Increase		Net Migration	
	Number	Percentage	Number	Percentage of total Increase	Number	Percentage of total Increase
			CANADA.			
1931-41(a)	1,130	10.9	1,222	108	- 92	-2
1941-51(a)	2,141	21.8	1,972	92	169	8
195,-61	4,229	30.2	3,148	74	1,081	26
1961-64	997	5.5	965	97	32	3
			QUEBEC			
1931-41	457	15.9	459	101	-2	-1
1941-51	724	21.7	736	102	-12	-2
1951-61	1,204	29.7	998	83	205	17
1961-64	303	5.8	290	96	13	4
			ONTARIO			
1931-41	356	10.4	278	78	77	22
1941-51	810	21.4	505	62	305	38
1951-61	1,637	35.6	953	58	685	42
1961-64	350	5.6	309	88	41	12

SOURCE: -Dominion Bureau of Statistics, 1941 Census of Canada, King's Printer, Ottawa, 1950, Vol. I, p. 17.
-Dominion Bureau of Statistics, 1951 Census of Canada, Queen's Printer, Ottawa, 1956, Vol. X, p. 13.
-Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1963, Vol. VII, Bulletin 7-1-1, p. 7.
-Dominion Bureau of Statistics, Vital Statistics 1964, Queen's Printer, Ottawa, 1966, pp. 68, 94.

(a) Excluding Newfoundland.

TABLE 4

TOTAL POPULATION AND NUMERICAL AND PERCENTAGE DISTRIBUTION BY FARM[a] AND NON-FARM FOR CANADA, QUEBEC AND ONTARIO, 1931-1961

(Population in Thousands)

Year	Total Population			Farm Population			Farm Population as a per cent of total			Non-Farm Population		
	Canada	Quebec	Ontario	Canada	Quebec	Ontario	Canada	Quebec	Ontario	Canada	Quebec	Ontario
1931	10,377	2,875	3,432	3,288	759	784	31	26	23	7,139	2,116	2,648
1941	11,507	3,332	3,788	3,113	827	691	27	25	18	8,394	2,505	3,097
1951	14,009	4,056	4,598	2,816	769	786	20	19	15	11,193	3,287	3,920
1961(b)	18,238	5,259	6,230	2,275	747	777	12	14	12	15,963	4,512	5,459
Per Cent Change												
1931-51	35.0	41.1	33.9	-14.4	1.3	.3	-	-	-	56.8	55.3	48.0
1951-61	30.2	29.7	35.6	-19.2	-2.9	-1.1	-	-	-	42.6	37.3	39.3
1931-61	75.7	82.9	81.7	-30.8	-1.6	- .9	-	-	-	123.6	113.2	106.2

SOURCE: Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa 1963, Volume VII, Bulletin 7.1-2, Tables XI, XII.

(a) Based on 1951 definition of "farm". See APPENDIX A.
(b) Personal estimate. The Canada figure includes Newfoundland. See APPENDIX A.

migration added 218,000 persons to the population of Quebec which amounted to 15.5 per cent of the total increase of 1,507,000 experienced during these two years.

Over the period 1931-1964, the population of age 15 and over increased by 1,792,000 from 1,852,000 to 3,644,000, or at an annual rate of 2.07 per cent which is a little higher than the rate of 2.02 per cent at which total population increased over the same period. But due to longer schooling and earlier retirement, the labour force participation rate (i.e., the proportion of the population 15 years of age and over at work or willing to work) declined by more than two percentage points from 54.8 per cent in 1931 to 52.0 per cent in 1964. This overall decline in labour force participation rate was interrupted by an actual increase during the period 1941-1951 (see Table 5 on page 33). The war and post-war high level of economic activities made the labour force increase faster than the population of age 15 years and over during this 1941-1951 period, or by 24 per cent compared to 19 per cent for the latter. But as Table 6 on page 34 shows, for the entire period 1931-1964, labour force increased by 87 per cent while population of age 15 years and over increased by 97 per cent.

More significant than labour force as an index of economic growth is the rate at which employment increases. Table 7 on page 35 indicates that between 1946 and 1964 civilian employment increased by 42 per cent from 1,283,000 in 1946

TABLE 5

NUMBER AND PERCENTAGE OF LABOUR FORCE BY SEX
FOR CANADA, QUEBEC, AND ONTARIO, IN SELECTED YEARS
(Population and Labour Force in Thousands)

	Total Population			15 Years and Over			Labour Force								
							Number			% of Total Population			% of 15 Years and Over		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
							CANADA(a)								
1931	10,303	5,307	4,997	7,086	3,710	3,376	3,908	3,245	663	37.7	60.5	13.3	55.2	87.4	19.6
1941(b)	11,490	5,891	5,599	8,297	4,274	4,023	4,184	3,352	831	36.4	56.9	14.8	50.4	78.4	20.7
1951	13,984	7,074	6,910	9,742	4,911	4,831	5,277	4,114	1,162	37.7	58.2	16.8	54.2	83.8	24.0
1961	18,200	9,198	9,003	17,023	6,039	5,984	6,458	4,694	1,764	35.5	51.0	19.6	53.7	77.7	29.5
1964(c)	19,194	9,676	9,518	12,742	6,376	6,366	6,759	4,837	1,922	35.2	50.0	20.2	53.0	75.9	30.2
							QUEBEC								
1931	2,875	1,447	1,427	1,852	933	919	1,014	813	201	35.3	56.2	14.1	54.8	87.1	21.9
1941(b)	3,332	1,673	1,659	2,269	1,137	1,132	1,182	922	259	35.5	55.1	15.6	52.1	81.1	22.9
1951	4,056	2,022	2,034	2,690	1,326	1,363	1,467	1,127	341	36.2	55.7	16.7	54.6	85.0	25.0
1961	5,259	2,632	2,627	3,396	1,681	1,715	1,768	1,289	479	33.6	49.0	18.2	52.1	76.7	27.9
1964(c)	5,562	2,782	2,780	3,644	1,802	1,842	1,895	1,388	507	34.1	49.9	18.2	52.0	77.0	27.5
							ONTARIO								
1931	3,432	1,749	1,683	2,473	1,262	1,210	1,343	1,094	249	39.1	62.6	14.8	54.3	86.7	20.6
1941(b)	3,788	1,921	1,866	2,863	1,452	1,411	1,452	1,138	314	38.3	59.2	16.8	50.7	78.3	22.3
1951	4,598	2,314	2,283	3,358	1,680	1,678	1,883	1,438	444	40.9	62.1	19.5	56.0	85.7	26.5
1961	6,236	3,135	3,102	4,228	2,106	2,122	2,393	1,701	692	38.4	54.2	22.3	56.6	80.7	32.6
1964(c)	6,586	3,303	3,283	4,463	2,216	2,247	2,547	1,774	773	38.7	53.7	23.5	57.1	80.1	34.4

SOURCE: -Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1963, Series SL, Bulletin SL-1, Table 1.
-Dominion Bureau of Statistics, Vital Statistics 1964, Queen's Printer, Ottawa 1966, p. 46.
-Dominion Bureau of Statistics, The Labour Force, Supplement to March 1965, Queen's Printer, Ottawa 1965, pp. 5, 23, 26, 45.

(a) Excludes Yukon and Northwest Territories.
(b) Excludes persons on active service on June 2, 1941.
(c) The labour force data for 1964 are personal estimates - See APPENDIX A.

Note: The "gainfully occupied" rather than the "labour force" concept was used prior to 1951 for determining the labour force status of the population.

TABLE 6

RATE OF CHANGE IN POPULATION 15 YEARS OF AGE AND OVER, AND IN LABOUR FORCE, BY SEX, CANADA, QUEBEC, ONTARIO, IN SELECTED YEARS

Year	Population 15 and Over			Labour Force		
	Total	Male	Female	Total	Male	Female
			CANADA			
1931-1941	17.1	15.2	19.1	7.0	3.3	25.3
1941-1951	17.4	14.9	20.1	26.1	22.7	39.8
1951-1961	23.4	23.0	23.8	22.4	14.1	51.8
1961-1964	6.0	5.6	6.4	4.7	3.0	9.0
1931-1964	79.8	71.9	88.6	73.0	49.1	189.9
			QUEBEC			
1931-1941	22.5	21.9	23.2	16.6	13.4	28.9
1941-1951	18.6	16.6	20.4	24.1	22.2	31.7
1951-1961	26.2	26.8	25.8	20.5	14.4	40.5
1961-1964	7.3	7.2	7.4	7.2	7.7	5.8
1931-1964	96.8	93.1	100.4	86.9	70.7	153.2
			ONTARIO			
1931-1941	15.8	15.1	16.6	8.1	4.0	26.1
1941-1951	17.3	15.7	18.9	29.7	26.3	41.4
1951-1961	25.9	25.3	26.5	27.1	18.3	55.9
1961-1964	5.6	5.2	5.9	6.4	4.3	11.7
1931-1964	80.5	75.6	85.7	89.7	62.2	210.4

SOURCE: Computed from TABLE 5.

TABLE 7

ESTIMATES OF CIVILIAN EMPLOYMENT IN CANADA, QUEBEC, ONTARIO, IN SELECTED YEARS

(In Thousands of Persons, 14 Years and Over)

Year	Canada	Quebec	Ontario
1931	3,670	N.A.	N.A.
1941	4,271	N.A.	N.A.
1946	4,666	1,283	1,654
1951	5,097	1,420	1,838
1961	6,055	1,652	2,269
1964	6,609	1,827	2,473
Per Cent Change			
1946-1951	9.2	10.7	11.1
1951-1964	29.7	28.7	34.5
1946-1964	41.6	42.4	49.5

SOURCE: -Bureau Féderal de la Statistique, Comptes nationaux, Revenus et Dépenses, 1926-1956, Imprimeur de la Reine, Ottawa, 1962, p. 103.

-Dominion Bureau of Statistics, The Labour Force, Supplement March 1965, Queen's Printer, Ottawa, 1965, pp. 5, 23, 26.

to 1,827,000 in 1964. Also important as a source of economic growth is the growth of productivity. Tables 8 and 9 on pages 37-40 summarize the growth of value added (constant dollars) per employee in the mining and manufacturing sectors. Value added per employee in the mining industry increased by 76 per cent between 1929 and 1959 from $2,704 to $4,768 per employee. For the manufacturing industry the increase was 37 per cent from $2,101 to $2,879.

Starting in 1959, data on mining and manufacturing were collected using a new industrial classification and a new establishment basis. Between 1959 and 1962, value added per employee in the mining industry increased by 10.3 per cent from $4,573 in 1959 up to $5,046 in 1962. In the manufacturing sector, value added per employee increased by 9.7 per cent between 1959 and 1963, from $2,895 in 1959 up to $3,177 in 1963.

(b) The Growth of Production and Income

Tables 10 to 13 on pages 41-46 summarize the growth of the net value of production in commodity production industries for the period 1931-1964. Both current and constant (1949) dollars figures are presented in Tables 10 and 11. Implicit price indices were developed to deflate both the total and each of the individual industry net value of production figures. The Canada indices of real domestic product by industry of origin were used to derive these implicit price indices. In order to apply the latter to

TABLE 8

MINERAL STATISTICS FOR CANADA, QUEBEC, AND ONTARIO, 1929-1962

	1929	1939	1949	1959	1959(b)	1962	Per Cent Change 1929-59	Per Cent Change 1959-62(b)
				CANADA				
Employees by '000	95.1	107.8	116.5	140.6	98.0	91.0	48	- 7
Value added by $000,000								
Current dollars	315.1	393.2	800.2	2,061.6	1,438.0	1,748.0	554	22
Constant dollars(a)	292.6	385.5	451.3	830.3	579.1	677.0	184	17
Value added (constant dollars) per employee	3,706	3,577	3,874	5,903	5,908	7,435	92	26
				QUEBEC				
Employees by '000	19.7	20.9	26.4	37.0	21.8	23.7	88	9
Value added by $000,000								
Current dollars	57.3	81.6	183.2	437.4	248.0	309.0	663	25
Constant dollars(a)	53.2	80.0	103.3	176.2	99.9	119.7	231	20
Value added (constant dollars) per employee	2,704	3,833	3,902	4,768	4,573	5,046	76	10

For footnotes see end of table.

TABLE 8

MINERAL STATISTICS FOR CANADA, QUEBEC, AND ONTARIO, 1929-1962 - Continued

	1929	1939	1949	1959	1959(b)	1962	Per Cent Change 1929-59	Per Cent Change 1959-62(b)
				ONTARIO				
Employees by '000	24.9	37.2	37.0	57.2	41.0	33.2	130	- 19
Value added by $000,000								
Current dollars	116.2	188.9	263.7	762.3	468.1	383.2	556	- 18
Constant dollars(a)	107.9	185.2	148.7	307.0	188.5	148.3	185	- 21
Value added (constant dollars) per employee	4,329	4,974	4,021	5,362	4,598	4,466	24	- 3

SOURCE: -Dominion Bureau of Statistics, Mineral Production of Canada 1930, King's Printer, Ottawa, 1932, p. 34.
-Dominion Bureau of Statistics, Mineral Production of Canada 1941, King's Printer, Ottawa, 1943, pp. 28-29
-Dominion Bureau of Statistics, General Review of the Mining Industry, 1959, Queen's Printer, Ottawa, 1961, pp. A-28, A-29.
-Dominion Bureau of Statistics, General Review of the Mineral Industries, 1962, Queen's Printer, Ottawa, 1966, pp. A-34, A-35.

(a) The constant 1935-1939 dollars values were obtained by deflating the current dollars values by the Wholesale Price Index - Non-metallic Mineral Products - for Canada. For an explanation of the technique used see APPENDIX A.
(b) Since 1959, the mineral statistics have been collected on the basis of a new industrial classification.

TABLE 9

MANUFACTURING STATISTICS FOR CANADA, QUEBEC, AND ONTARIO, 1929-1963

	1929	1939	1949	1959	1959(b)	1963	Per Cent Change 1929-59	Per Cent Change 1959-63(b)
					CANADA			
Employees by '000	667	658	1,171	1,304	1,288	1,427	96	11
Value added by $000,000								
Current dollars	1,755	1,531	5,331	10,321	10,153	13,173	488	30
Constant dollars(a)	1,491	1,502	2,676	4,272	4,203	5,182	187	23
Value added (constant dollars) per employee	2,127	2,283	2,285	3,276	3,263	3,631	54	11
					QUEBEC			
Employees by '000	207	220	390	431	427	464	108	9
Value added by $000,000								
Current dollars	538	470	1,652	2,999	2,987	3,747	457	25
Constant dollars(a)	435	461	829	1,241	1,236	1,474	185	19
Value added (constant dollars) per employee	2,101	2,095	2,126	2,879	2,895	3,177	37	10

For footnotes see end of table.

TABLE 9

MANUFACTURING STATISTICS FOR CANADA,
QUEBEC, AND ONTARIO, 1929-63 - Continued

	1929	1939	1949	1959	1959(b)	1963	Per Cent Change 1929-59	Per Cent Change 1959-63(b)
				ONTARIO				
Employees by '000	329	319	557	616	609	690	87	13
Value added by $000,000								
Current dollars	917	791	2,709	5,332	5,230	6,889	482	32
Constant dollars(a)	741	776	1,360	2,207	2,165	2,710	198	25
Value added (constant dollars) per employee	2,252	2,433	2,442	3,583	3,555	3,928	59	11

SOURCE: -Dominion Bureau of Statistics, General Review of the Manufacturing Industries, 1959, Queen's Printer, Ottawa, 1962, pp. 20 - 21.
-Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section A, 1959, Queen's Printer, Ottawa, 1961, p. 21.
-Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section A, 1963, Queen's Printer, Ottawa, 1966, p. 13.

(a) The constant 1935-1939 dollar values were obtained by deflating the current dollars value by the wholesale Price Index, Non-metallic Mineral Products - for Canada. For an explanation of the technique used See APPENDIX A.
(b) Since 1959 the manufacturing statistics have been collected on the basis of a new industrial classification.

TABLE 10

NET VALUE OF PRODUCTION IN COMMODITY-PRODUCING INDUSTRIES, IN SELECTED YEARS
(Millions of Dollars)

	1931	1935	1941	1951	1961	1964	Per Cent Change 1931-51	1951-64	1931-64
					CANADA				
Agriculture	404	492	736	2,481	1,715	2,199	514	- 11	444
Forestry	n.a.	67	164	660	666	817	880(c)	24	1,113(c)
Fishing	18	21	34	102	110	149	455	46	708
Trapping	9	9	15	20	12	13	127	- 34	50
Mining	160	169	356	770	1,626	2,164	383	181	1,256
Electric Power	120	125	183	364	888	1,019	202	180	746
Manufacturing	1,252	1,153	2,605	6,941	10,858	13,748	454	98	998
Construction	n.a.	316	479	1,832	3,701	4,393	480(c)	140	1,290(c)
Total (a)	1,963	1,969	3,930	10,677	15,205	19,292	444	81	883
Total (b)	n.a.	2,352	4,573	13,169	19,573	24,502	458(c)	87	942(c)
					QUEBEC				
Agriculture	80	77	134	316	285	232	297	26	192
Forestry	n.a.	23	57	220	174	180	857(c)	- 18	683(c)
Fishing	1.6	1.8	2.1	3.4	4.7	6.7	106	99	311
Trapping	1.4	1.1	1.4	2.4	1.9	2.1	66	- 11	47
Mining	20	18	65	165	279	419	745	154	2,048
Electric Power	42	48	69	129	254	296	208	129	606
Manufacturing	404	343	815	2,084	3,221	3,956	416	90	879
Construction	n.a.	85	132	453	872	1,146	433(c)	153	1,248(c)
Total (a)	548	488	1,086	2,700	4,045	4,912	393	82	796
Total (b)	n.a.	596	1,275	3,373	5,092	6,238	466(c)	85	947(c)

For footnotes see end of table.

TABLE 10

NET VALUE OF PRODUCTION IN COMMODITY-PRODUCING INDUSTRIES, IN SELECTED YEARS- Continued
(Millions of Dollars)

	1931	1935	1941	1951	1961	1964	Per Cent Change 1931-51	Per Cent Change 1951-64	Per Cent Change 1931-64
					ONTARIO				
Agriculture	147	145	209	573	565	550	289	- 6	273
Forestry	n.a.	16	33	119	115	127	658(c)	7	710(c)
Fishing	2.0	2.4	3.0	7.0	5.7	5.2	245	- 26	156
Trapping	1.8	1.6	2.8	5.2	2.5	3.9	191	- 24	121
Mining	65	84	158	179	428	395	175	121	509
Electric Power	46	44	65	127	327	361	174	184	678
Manufacturing	625	610	1,360	3,569	5,536	7,190	471	101	1,051
Construction	n.a.	122	174	684	1,217	1,434	461(c)	110	1,076(c)
Total (a)	887	886	1,799	4,461	6,864	8,505	410	90	858
Total (b)	n.a.	1,024	2,006	5,264	8,197	10,066	414(c)	91	883(c)

SOURCE: - Dominion Bureau of Statistics, Survey of Production 1963, Queen's Printer, Ottawa, 1966, pp. 20-29.
- The 1964 data, mining excepted, was obtained from the Dominion Bureau of Statistics' Industrial Output Section. The 1964 value for mining is a personal estimate - See APPENDIX A.

(a) Excluding construction and forestry.
(b) Including construction and forestry.
(c) The base year is 1935 and not 1931.

TABLE 11

NET VALUE OF PRODUCTION IN COMMODITY-PRODUCING INDUSTRIES, IN SELECTED YEARS

(Millions of Constant 1949 Dollars)

	1931	1935	1941	1951	1961	1964	Per Cent Change 1931-51	1951-64	1931-64
						CANADA			
Agriculture	1,582	1,617	1,817	2,058	1,975	2,387	30	16	51
Forestry	n.a.	220	308	526	486	592	139(c)	13	169(c)
Fishing) Trapping)	55	59	68	92	97	103	67	12	87
Mining	265	347	576	704	1,614	1,975	166	81	645
Electric Power	72	102	171	350	854	1,096	392	213	1,422
Manufacturing	1,894	2,079	4,195	6,178	8,897	11,295	226	83	496
Construction	n.a.	471	895	1,556	2,369	2,679	230(c)	72	469(c)
Total(a)	3,868	4,205	6,826	9,386	13,437	16,856	143	80	336
Total(b)	n.a.	4,896	8,029	11,464	16,292	20,127	134(c)	76	311(c)
						QUEBEC			
Agriculture	213	253	330	262	326	253	-16	- 19	- 3
Forestry	n.a.	75	107	175	127	130	133(c)	- 26	73(c)
Fishing) Trapping)	6	6	5	4	5	6	-33	50	-
Mining	32	37	104	151	277	382	372	153	1,094
Electric Power	25	39	65	126	246	319	404	153	1,176
Manufacturing	611	617	1,313	1,854	2,639	3,250	203	75	432
Construction	n.a.	127	247	385	558	699	203(c)	82	450(c)
Total(a)	987	952	1,817	2,397	3,493	4,210	143	76	327
Total(b)	n.a.	1,154	2,171	2,957	4,178	5,039	156(c)	70	337(c)

For footnotes see end of table.

TABLE 11

NET VALUE OF PRODUCTION IN COMMODITY-PRODUCING INDUSTRIES, IN SELECTED YEARS - Continued

(Millions of Constant 1949 Dollars)

	1931	1935	1941	1951	1961	1964	Per Cent Change 1931-51	Per Cent Change 1951-64	Per Cent Change 1931-64
					ONTARIO				
Agriculture	573	476	517	475	650	597	-18	26	3
Forestry	n.a.	51	61	94	84	92	84(c)	- 2	80(c)
Fishing) Trapping)	8	8	8	9	6	6	13	- 33	-25
Mining	107	173	256	163	425	361	52	121	237
Electric Power	28	36	61	122	317	388	343	218	1,286
Manufacturing	945	1,093	2,190	3,176	4,535	5,904	230	86	525
Construction	n.a.	182	325	581	779	874	219(c)	50	380(c)
Total(a)	1,666	1,791	3,032	3,947	5,933	7,259	137	84	336
Total(b)	n.a.	2,024	3,418	4,622	6,796	8,225	128(c)	78	306(c)

SOURCE: - TABLE 10
- Dominion Bureau of Statistics, Indexes of Real Domestic Product by Industry of Origin 1935-61, Queen's Printer, Ottawa, 1963, p. 67.
- Dominion Bureau of Statistics, Annual Supplement to the Monthly Index of Industrial Productionn Queen's Printer, Ottawa 1966, p. 19.

(a) Excluding construction and forestry.
(b) Including construction and forestry.
(c) The base year is 1935 and not 1931.
Note: For an explanation of the technique used for price deflation See APPENDIX A.

TABLE 12

ANNUAL COMPOUND RATE OF INCREASE OF NET VALUE OF INDUSTRIAL PRODUCTION CONSTANT 1949 DOLLARS, CANADA, QUEBEC, AND ONTARIO, FOR SELECTED PERIODS

Commodity-Production	Canada	Quebec	Ontario
Total(a)			
1931-51	4.5	5.3	4.4
1951-64	4.6	4.3	4.8
1931-64	4.6	4.5	4.6
Total(b)			
1931-51	5.5	6.0	5.3
1951-64	4.4	4.2	4.5
1935-64	5.0	5.2	5.0

SOURCE: Computed from TABLE 11.

(a) These rates apply to the total net value of commodity-production, excluding construction and forestry.

(b) These rates apply to the total net value of commodity-production, including construction and forestry.

TABLE 13

ANNUAL COMPOUND RATE OF INCREASE OF NET VALUE OF INDUSTRIAL PRODUCTION, CONSTANT 1949 DOLLARS, BY INDUSTRY, FOR CANADA, QUEBEC, AND ONTARIO, FOR SELECTED PERIODS

	Canada	Quebec	Ontario
Agriculture			
1931-51	1.3	- .9	-1.0
1951-64	1.2	- .3	1.8
Forestry			
1931-51	5.6	5.4	3.9
1951-64	.9	-2.3	- .2
Fisheries and Trapping			
1931-51	2.6	-2.1	- .6
1951-64	.9	3.2	-3.2
Mining			
1931-51	5.0	8.1	2.1
1951-64	8.0	7.4	6.3
Manufacturing			
1931-51	6.1	5.7	6.3
1951-64	4.8	4.4	4.9
Electric Power			
1931-51	8.2	8.1	7.6
1951-64	9.2	7.4	9.3
Construction			
1931-51	7.8	7.2	7.5
1951-64	4.3	4.7	3.2

SOURCE: Computed from TABLE 11.

Ontario and Quebec, the assumption of similar price movements had to be made. Appendix A presents a detailed explanation of the technique used as well as a justification of the assumptions involved.

Net value of production in constant (1949) dollars (excluding construction and forestry) increased by 315 per cent in Quebec between 1931 and 1964, from 987,000,000 up to 4.2 billion. This increase corresponds to a compound rate of increase of 4.51 per cent per annum. For the sub-periods 1931-1951 and 1951-1964, the corresponding annual rates of increase are 5.32 and 4.53 per cent respectively (see Table 11 on page 43). The growth of commodity production, excluding construction and forestry, was therefore more rapid at the beginning of the period 1931-1964 than at the end. More specifically, it was between 1935 and 1951, that commodity production increased at the fastest rate. For the sub-periods 1931-1935, 1935-1941, 1941-1951, 1951-1961 and 1961-1964, commodity production (forestry and construction excluded) increased by 5.25, 15.1, 5.3, 2.6 and 5.7 per cent respectively. The effect of the depression and of World War II is apparent for this period. As mentioned by Angers, Quebec was one of the Canadian provinces that benefited the most from the increased activity brought by the war.(8) This can be explained by the fact that at the beginning

(8) - F. A. Angers, "Progrès industriels du Québec", Actualité Economique, Hautes Etudes Commerciales, Montréal, juillet-septembre 1953, pp. 338-341.

of the war, Quebec had a large number of unemployed (compared to the other industrialized provinces) that were easily absorbed by industry. The rapid increase experienced between 1961 and 1964 reflects the fact that Quebec also participated in the unprecedented North American prosperity of the period 1961-1964(9) which incidentally continued into 1967.

Total commodity production itself, increased at the annual rate of 5.2 per cent between 1935 (the first year for which data on construction and forestry are available) and 1964. In 1935, total net value of commodity production was $1,154,000 and in 1964 it reached $5,039,000 (constant 1949 dollars).

As Table 11 on page 43 indicates, the seven industries that constitute the commodity production sector have followed a different growth path since 1931. The high growth industries were electric power, mining, construction and manufacturing. Net value of production (constant 1949 dollars) in these industries increased by 1,176, 1,094, 450 and 432 per cent respectively between 1931 and 1964.(10) Net value of production in forestry increased by only 95 per cent between 1935 and 1964, while in agriculture it declined

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(9) - The Economic Council of Canada, Third Annual Review, Queen's Printer, Ottawa, 1966, pp. 237-240.

(10) - For construction, the above rate of change is for the period 1935-1940. The same applies for forestry. See Table 11 on page 43.

by 3 per cent and in fishing and trapping it did not change. Both demand and supply factors were responsible for this variety in the growth experienced by the components industries of the commodity production sector. As income grows, the demand for certain goods increases faster than the demand for other goods which are considered less important, e.g., agricultural products versus durable consumer goods. Also, and this is particularly true for electric power and mining, the abundant supply of a specific natural resource (for which there is a demand) will usually be sufficient to induce a rapid growth of the industry that transforms this resource. Moreover, these high growth commodity production industries were also the industries that increased their share of labour and capital at the fastest rate since 1931.

A more global indication of economic growth in Quebec since 1931 is shown by the large increase in the provincial product, since then. The Economic Research Bureau of the Province of Quebec's Department of Industry and Commerce estimated that the constant (1949) dollar value of the provincial product reached $8.2 billion in 1964 (or $12.3 billion in current dollars). Using assumptions (explained in Appendix A) it can be established that in 1931 the constant (1949) dollar value of the provincial product was $2.1 billion (see Table 14 on page 50) (or $1.3 billion in current dollars). Therefore, between 1931 and 1964, the provincial product

TABLE 14

GROSS DOMESTIC PRODUCT AT FACTOR COST, CURRENT AND CONSTANT(a) 1949 DOLLARS, CANADA, QUEBEC, AND ONTARIO, 1931-1964

Year	Canada		Quebec(b)	
	Current Dollars	Constant Dollars	Current Dollars	Constant Dollars
1931	4,699	7,567	1,289	2,076
1941	8,238	12,351	2,160	3,238
1951	21,176	18,559	5,244	4,596
1961	37,471	26,650	9,915	7,051
1964	47,403	31,827	12,282	8,245
Per cent Change				
1931-51	351	145	365	121
1951-64	124	72	133	79
1931-64	909	321	853	297

SOURCE: -Dominion Bureau of Statistics, National Accounts Income and Expenditure 1966, Queen's Printer, Ottawa 1966, p. 61.

-Bureau Féderal de la Statistique, Comptes Nationaux Revenus et Dépenses 1926-1956, Imprimeur de la Reine, Ottawa 1962, p.36

-Province of Quebec, Budget Speech, April 8, 1965, p. 62.

(a) The current dollars values were deflated by the implicit price index of the G.N.E. for Canada. See APPENDIX A.

(b) The 1931, 1941, and 1951 values for Quebec are personal estimates. See APPENDIX A.

increased by almost 300 per cent. This large increase in the total product of the Province of Quebec was made possible largely by the overall increase in employment and labour productivity that has been experienced since 1931.

The economic expansion in the Province over the period 1931-1964 manifested itself in several ways. First, incomes in the Province rose considerably both in current terms and after allowance is made for rising prices.(11) In 1964 (see Table 15 on page 52) personal income in current dollars reached $8.9 billion, while in 1931 it was $953,000,000. In constant dollar terms, the increase was $4.5 billion, from $1.5 billion in 1931 up to $6.0 billion in 1964, (see Table 16 on page 53). Expressed in annual compound rate, this real increase amounts to an annual rate of 4.23 per cent for the entire period 1931-1964. The growth of personal income has been more rapid in recent years; between 1951 and 1964, personal income increased at the annual compound rate of 4.8 per cent, while it increased at the annual rate of 3.9 per cent between 1931 and 1951. Within these two sub-periods also, growth has been discontinuous. As shown in

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(11) - Incomes data were deflated by the implicit price index of the GNE (Gross National Expenditure). Implied in the use of this technique is the assumption that prices have changed in Quebec at the same rate as they have in Canada as a whole. This assumption is commented on in Appendix A.

TABLE 15

PERSONAL INCOME CURRENT DOLLARS
CANADA, QUEBEC, ONTARIO, 1931-1964
(Millions of Dollars)

Year	Canada	Quebec	Ontario
1931	3,615	953	1,533
1936	3,547	926	1,470
1941	5,851	1,470	2,494
1946	9,719	2,339	3,738
1951	15,824	3,763	6,093
1956	21,958	5,423	8,702
1961	28,522	7,272	11,490
1964	35,153	8,980	14,057
Per Cent Change			
1931-1951	338	295	297
1951-1964	122	139	131
1931-1964	872	842	817

SOURCE: -Bureau Féderal de la Statistique Comptes Nationaux Revenus et Dépenses, 1926-56, Imprimeur de la Reine, Ottawa, 1962, p. 66.
-Dominion Bureau of Statistics, National Accounts Income and Expenditure 1965, Queen's Printer, Ottawa, 1966, p. 36.

TABLE 16

PERSONAL INCOME NUMERICAL AND PERCENTAGE DISTRIBUTION AND RATE OF GROWTH CANADA, QUEBEC, ONTARIO, 1931-1964
(Millions of Constant 1949 Dollars[a])

	CANADA		QUEBEC				ONTARIO	
Year	Personal Income	Per Cent Change	Personal Income	Per Cent Change	Quebec[b] Canada	Quebec[c] Ontario	Personal Income	Per Cent Change
1931	5,821	-	1,535	-	-	.62	2,469	-
1936	6,116	5.1	1,597	4.0	.26	.63	2,534	2.6
1941	8,772	43.4	2,204	38.0	.25	.59	3,739	47.6
1946	12,508	42.6	3,010	36.6	.24	.63	4,811	28.7
1951	13,869	10.9	3,298	9.6	.24	.62	5,340	11.0
1956	17,168	23.8	4,240	28.6	.25	.62	6,804	27.4
1961	20,286	18.2	5,172	22.0	.25	.63	8,172	20.1
1964	23,597	16.3	6,028	16.6	.26	.64	9,436	15.5
Per Cent Change								
1931-51	138	-	115	-	-	-	116	-
1951-64	70	-	83	-	-	-	77	-
1931-64	305	-	293	-	-	-	282	-

SOURCE: -Bureau Federal de la Statistique, Comptes Nationaux Revenus et Depenses 1926-56, Imprimeur de la Reine, Ottawa, 1962, pp. 68 - 69.
-Dominion Bureau of Statistics, National Accounts Income and Expenditure 1965, Queen's Printer, Ottawa, 1965, p. 36.

(a) The current dollar values were deflated by the implicit price index of the G.N.E. for Canada. See APPENDIX A.
(b) Quebec as a percentage of Canada.
(c) Quebec as a percentage of Ontario.

Table 16 on page 53, the years 1936-1946 and 1951-1956 were periods of rapid growth while 1931-1936, 1946-1951, and 1956-1961 have been periods during which the growth of personal income was not as rapid.

Total income and personal income in real terms are two indices of the "volume" performance of an economy, but to study the welfare implications of economic growth, these two indicators have to be analyzed in relation to population. Over a period of time, income in real terms may have increased less rapidly than population, and the standard of living of the population may have experienced a decline.

This has not been the case in Quebec over the period 1931 to 1964. As Table 17 on page 55 indicates, real personal income per capita increased by 102 per cent between 1931 and 1964, or at the annual compound rate of 2.16 per cent. In 1931, personal income per capita was $535 and in 1964 it had reached $1,083. This global increase in real income per capita over the period 1931-1964 has taken place at irregular pace. It is only in 1938 that per capita income reached the pre-depression level. On the other hand, the periods 1936-1941, 1941-1946 and 1961-1964 were times of particularly rapid growth. Between 1946 and 1951 a decline of 2.0 per cent in real income per capita was experienced. This was the result of a particularly low annual rate of increase of personal income of 1.85 per cent between 1946 and 1951 (compared to an annual rate of 4.23 per cent for

TABLE 17

PERSONAL INCOME PER CAPITA CONSTANT 1949 DOLLARS, NUMERICAL DISTRIBUTION, RATE OF CHANGE, AND COMPARISON BETWEEN CANADA, QUEBEC, AND ONTARIO, 1931-1964

	CANADA		QUEBEC				ONTARIO	
Year	Personal Income Per Capita	Per Cent Change	Personal Income Per Capita	Per Cent Change	Quebec(a) Canada	Quebec (b) Ontario	Personal Income Per Capita	Per Cent Change
1931	560	-	535	-	.96	.74	720	-
1936	559	-.2	516	-3.6	.92	.73	703	-2.4
1941	762	36.3	661	28.1	.87	.67	987	40.3
1946	1,018	33.6	830	25.6	.82	.71	1,175	19.0
1951	990	-2.8	813	-2.0	.82	.70	1,161	-1.2
1956	1,067	7.8	916	12.7	.86	.78	1,259	8.4
1961	1,112	4.2	984	7.4	.88	.75	1,311	4.1
1964	1,226	10.3	1,083	10.0	.88	.76	1,433	9.3
Per Cent Change								
1931-51	77	-	52	-	-	-	61	-
1951-64	24	-	33	-	-	-	23	-
1931-64	119	-	102	-	-	-	99	-

SOURCE: -Dominion Bureau of Statistics, National Accounts Income and Expenditure 1965, Queen's Printer, Ottawa, 1966, p. 58.
-Bureau Federal de la Statistique, Comptes Nationaux Revenus et Depenses 1926-56, Imprimeur de la Reine, Ottawa, 1962, p. 102.
-TABLE 16.

(a) Quebec as a percentage of Canada.
(b) Quebec as a percentage of Ontario.

the whole period 1931-1964) and of a high rate of population increase of 2.3 per cent (compared to an annual increase of 2.02 per cent for the entire period 1931-1964).

2. Economic Growth Compared: Quebec, Ontario and Canada

The real significance of economic growth experienced by Quebec since 1931 can be facilitated if compared to the growth experienced in Ontario and Canada during the same period. Such a comparison becomes meaningful when both the rates of growth and the levels reached are analyzed. The following comparison is developed within a supply framework: it is extended to the "supply" determinants of production and income, e.g., population, labour force and employment.

(a) Population, Labour Force and Employment Compared

In 1931, the population of Quebec was 27.7 and 83.7 per cent respectively of the population of Canada and Ontario. In 1951, these percentages had increased to 28.9 and 88.2. In 1964, Quebec's population as a percentage of that of Ontario and Canada was still at a higher level than it was in 1931, but it had decreased in comparison to what it was in 1951. In 1964, Quebec had a population of 5.6 million inhabitants which was 28.8 and 84.4 per cent of Canada's and Ontario's population respectively. During the whole period 1931-1964, the rate of natural increase was greater in Quebec than in Canada and Ontario (see Table 2 on page 29). During that period, population increased at the annual compound rate

of 2.02 per cent in Quebec, and at the annual rate of 1.99 per cent in Canada and in Ontario. Therefore, the "economic growth stimulus" of population expansion should have been somewhat more important in Quebec than in Canada and Ontario during this period.

Since 1931, the population participation rate (e.g., labour force as a percentage of total population) has always been smaller in Quebec than in Ontario. In 1931, 35.3 per cent of the population of Quebec was at work or willing to work, while this percentage was 37.7 and 39.1 for Canada and Ontario respectively (see Table 5 on page 33). In 1964, the population participation rate was 34.1 per cent in Quebec and 35.2 and 38.7 per cent in Canada and Ontario respectively. Therefore, during the entire period 1931-1964, a smaller fraction of the population was gainfully occupied in Quebec than was the case in Canada and Ontario. This had a depressing effect on per capita income of Quebec as compared to the standard of living enjoyed by the people of Canada as a whole and of Ontario (see Page 64).

The disadvantage suffered by Quebec in its population participation rate, is due to the fact that since 1931 there have generally been proportionately fewer people of age 15 years and over in Quebec than there were in Canada and in Ontario. This structural difference between the population of Quebec and the population of Canada and Ontario is explainable by the fact that immigration has been

a more important factor of population growth in Canada and in Ontario than in Quebec. Indeed, until 1951, net migration has been a negative factor in the growth of the population of Quebec.

Moreover, the women of Quebec for sociological and economic reasons (e.g., size of the family, less advanced urbanization) tended to remain at home while the women of Ontario were more willing (at least until 1951) to seek gainful employment. Finally, there is a relatively greater number of persons in religious institutions in Quebec than in Ontario.(12) This last factor also contributes to make the population participation rate of Quebec lower than that of Ontario.

In 1946, Quebec had a civilian employment of 1,283 thousand which was 78 per cent and 28 per cent of civilian employment in Ontario and Canada respectively. At the same date the population of Quebec was 81 per cent and 30 per cent of Ontario's and Canada's population. In 1964 Quebec's civilian employment as a percentage of Ontario's and Canada's civilian employment was 75 per cent and 28

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(12) - In 1951 there were in Canada 28,105 clergymen, nuns and brothers, while in Quebec and Ontario there were 13,884 and 6,766 respectively. In 1961 the persons in religious institutions numbered 33,715 in Canada and 13,784 and 4,389 in Quebec and Ontario respectively. 1951 Census of Canada, Volume IV, Table 4, p.4-1. 1961 Census of Canada, Volume 3, Bulletin 3, 1-3, Table 6, p. 6-4.

per cent respectively, while Quebec's population as a percentage of Ontario's and Canada's population was 85 per cent and 29 per cent respectively. These comparative figures reveal that Quebec's share of total Canadian civilian employment was lower than it should have been on the basis of its share of Canada's population only. This economic disadvantage suffered by Quebec has been caused firstly by the smaller size of its labour force (i.e., in relation to total population). Secondly, the unemployment rate in Quebec has, as a rule, been higher than that of Canada and Ontario.(13)

The high unemployment rate of Quebec can be partially explained by its relatively low level of investment and by the structure of its labour force. The Economic Council of Canada has established that for the period 1951-1964, investment per capita in Quebec has been equal only to 83 per cent of the Canadian average, while the Ontario figure was higher than the Canadian figure by 5 per cent.(14) Investment being a primary determinant of the level of employment, it is likely that unemployment would have been

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(13) - Le Conseil Economique du Canada, Deuxième exposé annuel, l'Imprimeur de la Reine, Ottawa 1965, p. 128.
- The Senate of Canada, Report of the Special Committee of the Senate on Manpower and Employment, Queen's Printer, Ottawa 1961, p. 74.

(14) - Le Conseil Economique du Canada, Deuxième exposé annuel, l'Imprimeur de la Reine, Ottawa 1965, p. 133.

lower in Quebec had it not been for the low level (compared to Ontario) of investment in that province during the period covered in this study. Moreover, there are relatively more people in Quebec than in Ontario who are employed in such industries as forestry, fishing, construction, public utilities, and transportation. These industries are the industries that are the most severely affected by seasonal unemployment. Also in some areas of Quebec, it is "the less stable manufacturing industries which predominate".(15) This latter fact reinforces the seasonal character of employment in Quebec.

(b) Production and Income Compared

In 1935, Quebec's industrial production amounted to 24 and 57 per cent of that of Canada and Ontario. In 1964, these percentages were 25 and 60. Between 1935 and 1955, Quebec's industrial production as a percentage of that of Ontario and Canada remains almost constant (see Table 10). This can be explained by the fact that during this period industrial production grew at almost the same rate in Quebec, Ontario and Canada. André Raynauld established, through the least square method, that industrial production increased at the annual rate of 10.5 and 9.8 per cent (between 1935 and 1955) in Quebec and Ontario respectively. This similarity in the overall growth of commodity production of Quebec and

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(15) - The Senate of Canada, op.cit., p. 75.

Ontario was, according to Raynauld, the result of the equalizing role of free movements of people, capital and goods between the two provinces.(16) W. Hard and A. Scott share Raynauld's views.(17)

Since 1951 though and particularly since 1961, industrial production tended to increase at a slower rate in Quebec than in Ontario and (to a lesser extent) in Canada. All the industries of the commodity-production sector, except fishing and construction, have increased their value added at a slower rate in Quebec than in Canada and Ontario (see Table 13). Between 1951 and 1964, total commodity-production increased at an average annual rate of 4.2, 4.4 and 4.5 per cent in Quebec, Canada and Ontario respectively. During this period, as was seen earlier, population and labour force increased less rapidly in Quebec than in Ontario. Also, investment funds in Quebec, particularly since the mid-fifties, have been increasingly allocated to such sectors as housing, institutions, governments, services, and utilities. In Ontario, a greater proportion of total investment was allocated to manufacturing industries, non-residential

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(16) - A. Raynauld, op.cit., p. 48.
(17) - W. Hard and A. Scott, Production, Travail et Capital, dans l'Economie Canadienne, Commission d'Enquête sur les perspectives économiques du Canada, l'Imprimeur de la Reine, Ottawa, 1957, pp. 75, 85.

construction and to primary industries.(18)

Real income per capita is the index most frequently used to compare the economic performance of two regions. Per capita income (constant dollars) in 1931 was $535 and $720, in Quebec and Ontario respectively, that of Quebec being 74 per cent of that of Ontario. In 1951, per capita income of Quebec was 70 per cent of that of Ontario. Since 1961, per capita income increased more rapidly in Quebec than in Ontario and in 1964, Quebec's per capita income was 76 per cent of that of Ontario.

The recent improvement in Quebec's standard of living in relation to Ontario's should be considered in an historical perspective in order to avoid a too optimistic conclusion. André Raynauld has indicated that the gap between Quebec's and Ontario's average income has existed, at least since 1867.(19) The historical statistical series that Raynauld presents, also indicate that in many instances in the past, the income gap between Quebec and Ontario has been narrowed. But the long term trend is one

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(18) - B. Bonin, "Répartition régionale des investissements depuis la guerre", Actualité Economique, Hautes Etudes Commerciales, Montréal, janvier-mars, 1960, p. 587.
- J. Lotte, "L'Evolution récente des investissements au Canada", Actualité Economique, Hautes Etudes Commerciales, Montréal, janvier-mars, 1962, pp. 655-657.

(19) - A. Raynauld, op.cit., pp. 58-63.

of a persisting gap between Quebec and Ontario. This income gap between Quebec and Ontario has averaged 27.5 per cent between 1926 and 1958.

If government transfer payments are excluded, the comparison between Quebec and Ontario is even more disadvantageous for Quebec. In 1931, instead of being 74 per cent of Ontario's average earnings, Quebec's average income, excluding transfer payments is equal to 73 per cent of that of Ontario. In 1951 and 1964, the proportions are 68 per cent instead of 70 and 73 per cent instead of 76 respectively.

The main factors that are responsible for this income gap between Ontario and Quebec can be grouped under two types. Firstly, there are quantitative differences which encompass such differences as the variations in the labour force participation rate, the number of persons employed, and the difference in hours worked. The second type of factor can be called the qualitative differences. The latter include differences in the structure of earnings (and productivity) and in the structure of labour force, as well as differences in the "mix of occupations". In this chapter, only the quantitative differences and their role (in relation to the income gap between Quebec and Ontario) will be analyzed. The study of the qualitative factors will be found in Chapter III.

According to the Economic Council of Canada, one of the most important causes of regional differences in average income in Canada, is the regional difference in labour force participation rate. The Council maintains that "toutes choses égales d'ailleurs, plus forte est, dans une région, la proportion de la population globale employée à des emplois rémunérés, plus élevé y est le revenu par habitant".(20) In 1931, the labour force participation rate in Quebec was 90 per cent of that of Ontario. It can be calculated that Quebec's average income would have been 82 per cent of Ontario's (or $590 instead of $535) if Quebec's labour force participation rate had been as high as that of Ontario at that time. In 1961, Quebec's participation rate was 89 per cent of that of Ontario and if it had been identical, Quebec's average income would have been $1,101 (instead of $984) or 84 per cent of that of Ontario (instead of 75 per cent).

It was indicated earlier, that unemployment in Quebec has been traditionally higher than in Ontario. This higher rate of unemployment (or lower rate of employment) has also contributed to the income gap between the two provinces. In 1961, Quebec's "population-employment" rate

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(20) - Conseil Economique du Canada, Troisième Exposé Annuel, l'Imprimeur de la Reine, Ottawa, 1966, p. 270.

(i.e., total employment as a percentage of total population) was 86 per cent of that of Ontario. It can be calculated that if this "population-employment" rate had been identical in Quebec and Ontario, Quebec's average income in 1961 would have been $1,141 (instead of $984), or 87 per cent of that of Ontario (instead of 75 per cent).

Finally, provincial variations in hours worked per week are another quantitative factor that contributes to regional differences in income. Their effect in Canada though has been so small according to Denton that they can be ignored.(21) Moreover, this factor has favoured Quebec since average working hours have been traditionally higher in Quebec than in Ontario.(22)

It can be concluded that even if the total number of man-hours had been the same in Ontario and Quebec in 1931 and 1961, Quebec's average income would still have been lower to Ontario's by 10 per cent (in 1931) and 13 per cent

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(21) - F. T. Denton, An Analysis of Interregional Differences in Manpower Utilization and Earnings, Economic Council of Canada, Staff Study No. 15, Queen's Printer, 1966, p. 10.

(22) - In 1939, the average person employed in manufacturing worked 47 hours per week in Ontario, and 48 hours in Quebec. In 1950, average hours of work per week in manufacturing was 42 hours in Ontario and 44 hours in Quebec (Private and Public Investment in Canada, 1926-1951), Department of Trade and Commerce, King's Printer, Ottawa, 1951, pp. 131-133.

(in 1961). There are obviously other factors than the quantitative differences in manpower utilization that have created the income gap between Quebec and Ontario. Among these other factors, structural differences are of prime importance.

THE ECONOMIC IMPLICATIONS OF STRUCTURAL DIFFERENCES BETWEEN QUEBEC AND ONTARIO

CHAPTER III

The previous chapter established that differences in the quantitative factors (e.g. the proportion of total population in the labour force, the proportion of total population actually employed, hours of work per week) only partly explain the differences of personal and labour income that have existed, at least since 1931, between Quebec and Ontario.

Qualitative factors, such as differences in the structure of employment (or labour force) by industry, and differences in the productivity of labour, serve as a supplementary explanation of the income gap between Quebec and Ontario.(1) The purpose of this third chapter is to measure to what extent these qualitative factors were at work in 1931 and 1961.

1. The Economic Structure of the Province of Quebec Since 1931

It was said in the introduction, that the concept "economic structure" could be defined in four different ways. Here, only three aspects of the economic structure

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(1) - Quebec and Ontario have reached a similar stage of development as far as their economic structure is concerned. It is in these two provinces that the Canadian manufacturing industry is concentrated. This explains why the economy of Quebec and Ontario is usually studied in comparison with each other rather than in comparison with Canada as a whole.

of Quebec will be studied. A description of the changes that have affected the structure of the population will serve as a first indicator of the economic changes experienced by the Province of Quebec since 1931. Then the changing nature of the industrial and occupational structure of the labour force will be analyzed and related to the changes that have occurred in the composition of output since 1931. Finally, the factors behind these structural changes will be studied.

(a) The Structure of the Population

Table 4 on page 31 presents data on the farm - non-farm structure of the population of Quebec for the period 1931-1961. The concept of a farm has changed since 1931, but the main idea behind it remains; the farm population is that part of the total population which lives in a rural area and which earns its living mainly from cultivating the soil and/or from stock-farming. Since 1931, the farm population of Quebec declined by 2 per cent from 759,000 in 1931, to 747,000 in 1961. During the same period, the non-farm population of Quebec increased by 113 per cent from 2,116,000 in 1931, up to 4,512,000 in 1961. As a result of this difference in rate of growth, the farm population amounted only to 14 per cent of the total population in 1961, while it constituted 26 per cent of the total population in 1931.

Until 1941 the farm population was still increasing in absolute terms. During the depression years many urban Quebecers faced with unemployment in the cities, elected to return to the farm where at least food was in abundant supply. But with the return of prosperity the trend towards urbanization was resumed again, this time at an even more rapid rate. Between 1941 and 1961, the farm population declined by 11 per cent compared to 2 per cent for the whole period 1931-1961. Actually, urbanization in Quebec started between 1911 and 1921,(2) and since then it has been paralleled, as will be seen later, by shifts of labour from the primary agricultural sector to the secondary and tertiary sectors of the economy. Here it will be sufficient to mention the effect that changes in the structure of economic activities has had on the rural-urban structure of the population.

(b) The Structure of the Labour Force

These changes in the structure of economic activities, to be described later on, "together with technological progress and the shifts from direct-production labour to indirect-office and supervisory work",(3) have transformed the

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(2) - P. W. Wilson, S. Gordon and S. Judek, Canada: An Appraisal of its Needs and Resources, Twentieth Century Fund, New York, 1965, Table 3.24, p. 136.
(3) - Ibid., p. 267.

occupational structure of the labour force of Quebec. If workers are grouped on the basis of their profession or trade irrespective of the industry in which they are working (as in Table 18 on page 71), it can be seen that certain occupations have become more important in Quebec while others have declined since 1931.

Table 18 on page 71 shows that the white-collar occupations increased by 150 per cent between 1931 and 1961, which is faster, both absolutely and relatively, than any other occupational group. As a result of this rapid rate of growth, the white-collar share of the total labour force increased from 25.9 per cent of the total labour force in 1931, to 37.2 per cent in 1961. Among the white-collar category, the two fastest growing groups have been the clerical workers and the professionals with a rate of increase of 211 per cent and 160 per cent respectively.

The particularly rapid growth of the clerical group has been explained by the rapid expansion of "record-keeping and paper-work" required to meet the increasingly complex requirements of modern business and government. The growth of the professional occupations reflects the fact that as income grows, people tend to spend more on health and on education. It also reflects the rise of government and community services, as well as the impact of technological changes which result in greater demand for the

TABLE 18

PERCENTAGE DISTRIBUTION OF LABOUR FORCE BY OCCUPATION, QUEBEC AND ONTARIO, 1931-1961

Occupation	1931		1961	
	Quebec	Ontario	Quebec	Ontario
White collars	25.9	27.7	37.2	41.0
Proprietary and managerial	5.7	6.1	7.3	8.0
Professional	6.9	6.3	10.3	10.0
Clerical	7.0	8.3	12.3	14.9
Commerce and Financial	6.3	7.0	7.2	8.2
Blue collars	33.3	31.5	30.6	28.5
Manufacturing and mechanical	13.9	15.3	19.0	18.4
Construction	5.7	5.1	5.9	4.9
Labourers	13.7	11.1	5.7	5.1
Transportation and Communication	6.0	6.8	7.7	6.9
Service	10.0	9.2	11.2	12.3
Primary	24.6	24.7	10.2	8.9
Not stated	.2	.1	3.1	2.3
All occupations	100.0	100.0	100.0	100.0

SOURCE: -Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1966, Series SL, TABLE 5.

services of professionally trained personnel in production and research.(4)

The blue-collar occupational group experienced between 1931 and 1961 a lower than average rate of increase, and as a result, its share of the total Quebec labour force declined by more than 2 percentage points from 33.3 in 1931, to 30.6 per cent in 1961. As can be seen in Table 18 page 71 the sharp decline of the sub-group labourers was mainly responsible for the relative decrease experienced by the blue-collar occupations. It seems that technological changes have had a greater impact on labourers than on any other group of workers.

The "service" occupational group, which includes persons engaged in personal and protective services, saw its share of the total Quebec labour force increased by 1.2 per cent between 1931 and 1961. Transportation and communication also increased their share of the total labour force since 1931. In 1931, transportation and communication amounted to 6 per cent of the labour force; in 1961 this percentage reached 7.7 per cent. The higher than average rate of increase experienced in the last thirty years by service, transportation and communication occupations, also reflects the increase that Quebecers have enjoyed in their

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(4) - Ibid., p. 268.

standard of living since 1931. Urbanization, growing specialization and concentration of industry have also contributed to the rapid increase of transportation and communication occupations.

The primary industry occupational group is the only major group which showed an absolute decline between 1931 and 1961. This decline was from 250,000 in 1931 to 181,000 in 1961, or 27 per cent. As a result, the primary industries share of total employment decreased by 14.4 per cent from 24.6 per cent in 1931, down to 10.2 per cent in 1961. Certain occupations within the primary group, however, experienced a higher than average rate of increase over this period. Logging and mining occupations, for example, increased by 116 per cent and 122 per cent respectively between 1931 and 1961, while the total labour force in Quebec increased by only 73 per cent over the same period.

The overall trend that can be observed behind these changes that have occurred since 1931 in the occupational structure of the Province of Quebec's labour force is that occupations requiring a higher level of education and training have increased faster than any other occupations. Wilson, Gordon and Judek, in their analysis of Canada's economic needs and resources, have noted that the Canadian occupational structure has experienced similar

changes since 1931. They had this to say:

> In short economic growth not only entails a changing industrial structure but also, as both cause and effect, ever increasing demands for higher skills and improved quality of labour.(5)

Quoting Hill and Harbison(6) they added that:

> ... a progressing industrial economy becomes increasingly dependent upon the brains and much less dependent upon the brawn of its working forces.

In Galbraithian words this amounts to say that in a highly industrialized economy the bulk of economic growth comes from:

> ... improvements in men and improvements brought about by highly improved men.(7)

At the same time as the occupational structure of Quebec's labour force was changing, the industrial distribution of its workers was also experiencing a profound transformation. Compared to its occupational structure, the industrial structure of a labour force is more closely related to the structure of production. For this reason, the changes that occur in the industrial distribution of the labour force serve as a more meaningful indicator of the changing character of economic activities in a given area.

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(5) - Ibid., p. 25.
(6) - Ibid., p. 26, a quotation from E. Hill, and F. Harbison Manpower in American Industry, Princeton, 1959, p. 3.
(7) - J. K. Galbraith, The Liberal Hour, Houghton Mifflin, New York, 1960, p. 50.

Table 19 on page 76 summarizes what has happened to the industrial structure of the labour force of Quebec since 1931. To render the analysis more revealing, the major industry groups have been broadly subdivided into three principal categories, the primary, the secondary, and the tertiary sectors.

Between 1931 and 1961, the primary industries, which include agriculture, fishing and trapping, forestry and mining, declined absolutely in terms of labour force, while the tertiary (service) sector, and to a lesser extent, the secondary (manufacturing and construction) sector experienced an increase in both absolute and relative terms. The growth of service-producing industries followed the rise in the standard of living and accompanying shifts in the demand for "luxury" manufactured goods and for social and personal services.

Between 1931 and 1961, the primary industries experienced a decline of 20 per cent in their total number of workers, and their share of the labour force decreased by more than 13 percentage points down to 11.5 per cent in 1961 from 24.8 per cent in 1931. Table 19 on page 76 shows that the agricultural labour force declined by 41 per cent between 1931 and 1961, and that its share of the total labour force was only 7.4 per cent in 1961, compared to 21.8 per cent in 1931. What happened to the agricultural labour

TABLE 19

LABOUR FORCE, 15 YEARS OF AGE AND OVER, BY INDUSTRY DIVISIONS, FOR QUEBEC AND ONTARIO, 1931-1961 CENSUSES SHOWING PERCENTAGE DISTRIBUTION BY INDUSTRY AND DECADE-TO-DECADE PERCENTAGE INCREASE

(Labour Force in Thousands)

	1931(a)		1941		1951		1961		Percentage increase			
	Total	% Share	Total	% Share	Total	% Share	Total	% Share	1931-1941	1941-1951	1951-1961	1931-1961
					QUEBEC							
All industries	1,018.5	100.0	1,181.7	100.0	1,467.4	100.0	1,768.1	100.0	16.0	24.2	20.5	73.6
Goods-producing industries	547.2	53.8	689.8	58.5	788.1	53.7	795.3	45.0	26.1	14.3	1.0	45.3
Agriculture	221.8	21.8	249.4	21.1	192.4	13.1	131.2	7.4	12.4	-22.9	-31.8	-40.4
Forestry	16.9	1.7	34.9	3.0	45.0	3.0	42.4	2.4	106.5	28.9	-5.8	150.9
Fishing and Trapping	6.2	.6	7.9	.7	5.2	.4	3.0	.2	27.4	-34.2	-42.3	-51.6
Mining	8.2	.8	13.7	1.2	19.9	1.4	25.9	1.5	67.1	45.3	30.2	215.9
Manufacturing	215.3	21.1	310.6	26.3	432.3	29.5	466.4	26.4	44.3	39.2	7.9	116.6
Construction	79.0	7.8	73.2	6.2	93.2	6.4	126.4	7.1	-7.3	27.3	35.6	60.0
Service-producing industries	418.0	41.0	475.5	40.2	651.7	44.4	921.6	52.1	13.8	37.1	41.4	120.5
Transportation and utilities	79.4	7.8	79.8	6.8	128.9	8.8	161.3	9.1	.5	61.5	25.1	103.1
Trade	106.0	10.4	131.3	11.1	185.6	12.6	248.1	14.0	23.9	41.4	33.7	134.1
Finance, insurance, and real estate	26.3	2.6	24.9	2.1	38.9	2.7	62.2	3.5	-5.3	56.2	59.9	136.5
Community and business	74.6	7.3	88.5	7.5	126.7	8.6	205.6	11.6	18.6	43.2	62.3	175.6
Personal services	102.9	10.1	117.0	9.9	102.2	7.0	135.3	7.7	13.7	-12.2	31.7	31.5
Recreation	4.1	.4	4.1	.3	7.1	.5	9.9	.6	-	73.2	39.4	141.5
Government	24.7	2.4	29.8	2.5	61.7	4.2	99.2	5.6	20.6	107.0	60.8	301.6
Not stated	53.3	5.2	16.4	1.3	27.6	1.9	51.2	2.9	-69.2	68.3	81.9	-3.9
Primary industries	252.9	24.8	306.0	25.9	262.6	17.9	202.5	11.5	21.0	-14.2	-22.9	-19.9
Secondary industries	294.3	29.0	383.8	32.5	525.5	35.8	592.8	33.5	30.4	36.9	12.8	101.4
Tertiary industries	418.0	41.0	475.5	40.2	651.7	44.4	921.6	52.1	13.8	37.1	41.4	120.5

For footnotes see end of table.

TABLE 19

LABOUR FORCE, 15 YEARS OF AGE AND OVER, BY INDUSTRY DIVISIONS, FOR QUEBEC AND ONTARIO, 1931-1961 CENSUSES SHOWING PERCENTAGE DISTRIBUTION BY INDUSTRY AND DECADE-TO-DECADE PERCENTAGE INCREASE - Continued

(Labour Force in Thousands)

	1931(a)		1941		1951		1961		Percentage Increase			
	Total	% Share	Total	% Share	Total	% Share	Total	% Share	1931-1941	1941-1951	1951-1961	1931-1961
					ONTARIO							
All industries	1,343.5	100.0	1,452.0	100.0	1,882.6	100.0	2,393.0	100.0	8.1	29.7	27.1	78.1
Goods-producing industries	741.6	55.2	828.7	57.1	979.2	52.0	1,028.7	43.0	11.7	18.2	5.1	38.7
Agriculture	300.3	22.4	267.9	18.6	201.1	10.7	168.8	7.1	-10.1	-25.5	-16.1	-43.8
Forestry	10.1	.8	16.5	1.1	23.0	1.2	17.9	.7	63.4	39.4	-22.2	77.2
Fishing and Trapping	6.0	.4	5.5	.4	2.3	.1	2.2	.1	-8.3	-58.2	-4.3	-63.3
Mining	18.9	1.4	32.1	2.2	30.6	1.6	42.7	1.8	69.8	-4.7	39.5	125.9
Manufacturing	315.9	23.5	429.0	29.5	603.8	32.1	643.3	26.9	35.8	40.7	6.5	103.6
Construction	90.4	6.7	77.6	5.3	118.4	6.3	153.9	6.4	-14.2	52.6	30.0	70.2
Service-producing industries	554.9	41.3	610.0	42.0	885.0	47.1	1,312.6	54.9	9.9	45.1	48.3	136.5
Transportation and utilities	116.7	8.7	104.9	7.2	168.0	8.9	195.2	8.2	-9.1	60.2	16.2	67.3
Trade	155.8	11.6	186.5	12.8	272.3	14.5	370.6	15.5	19.7	46.0	36.1	137.9
Finance, insurance, and real estate	37.4	2.8	38.8	2.7	61.7	3.3	98.5	4.1				
Community and business	83.3	6.2	91.7	6.3	140.0	7.4	262.8	11.0	10.1	52.7	87.7	215.5
Personal services	115.1	8.6	132.0	9.1	115.6	6.1	187.5	7.8	14.7	-12.4	62.2	62.9
Recreation	7.3	.5	7.2	.5	11.6	.6	16.9	.7	-1.4	61.1	45.7	131.5
Government	39.3	2.9	49.1	3.4	115.7	6.1	181.3	7.6	24.9	135.6	56.7	361.3
Not stated	47.0	3.5	13.5	.9	18.4	.9	51.7	2.1	-71.3	36.3	181.0	10.0
Primary industries	335.3	25.0	322.1	22.2	257.0	13.7	231.5	9.7	-3.9	-20.2	-9.4	-31.0
Secondary industries	406.3	30.2	506.6	34.9	722.2	38.4	797.2	33.3	24.7	42.6	10.4	43.7
Tertiary industries	554.9	41.3	610.0	42.0	885.0	47.0	1,312.6	54.9	9.9	45.1	48.3	136.5

SOURCE: - Dominion Bureau of Statistics, 1951 Census of Canada, Queen's Printer, Ottawa, 1954, Series SP-8, Tables 10, 11.
- Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1966, Series SL-1, Tables 12, 12A, and 12B.

(a) Adjusted data. See APPENDIX A.

force just paralleled the decline of agricultural output in relation to total output, (see p. 88). But due to increased agricultural productivity resulting from more extensive mechanization and farm consolidation, the decline in agricultural labour force was both relative and absolute while the decline in agricultural output was only in relation to total output.

The decline since 1931 in fishing and trapping, as well as in agricultural and for the same reasons, was both relative and absolute. In 1931, 0.6 per cent of the total labour force of Quebec was found in fishing and trapping. In 1961, this percentage declined to 0.2 per cent. In mining and forestry, the trend since 1931 was the opposite to that just observed for agriculture, fishing and trapping. The share of mining and forestry labour force in the total labour force of Quebec was 0.8 per cent and 1.6 per cent respectively in 1931. In 1961, this share had reached 1.5 per cent for mining and 2.4 per cent for forestry. The postwar mining development (e.g., Labrador), and the rapid increase in world demand for paper and mineral products explain, to a large extent, the growth of the mining and forestry labour force since 1931.

The secondary sector, which includes manufacturing and construction, increased its share of the total labour force by 3.5 per cent between 1931 and 1961. The latter was 29.0 per cent in 1931 while in 1961 it reached 33.5 per cent. The growth of the manufacturing labour force was greatly affected by the war effort which brought pressure on the manufacturing sector to supply the urgent needs of the time. Since the end of the war the growth of the manufacturing labour force seems to have levelled off.(8) The same trend developed in the growth of manufacturing output (see p. 94). It would appear that the economy of Quebec has reached Rostow's mass-consumption stage which is characterized by the rapid expansion of the service and consumer durables industries. As far as construction is concerned, due to a lower than average rate of increase, its share of the total labour force, which was 7.8 per cent in 1931, has declined to 7.1 per cent in 1961.

Since 1931, the service-producing industries experienced the fastest rate of growth of the labour force. Between 1931 and 1961, as can be seen in Table 19 on page 76 the labour force in the service sector increased by 121

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(8) - The manufacturing labour force in Quebec increased by 9, 38, and 4 per cent between 1931 and 1941, 1941 and 1951, and 1951 and 1961 respectively.

per cent compared to a rate of increase of 101 per cent in the secondary sector, and to a decline of 20 per cent in the primary sector. The service-producing industries increased their share of the total Quebec labour force by more than 11 percentage points during this period, from 41.0 in 1931 to 52.1 per cent in 1961.

Among the service industries, the government, and business and community services experienced a particularly rapid increase of 302 and 174 per cent respectively. The rapid growth of these two industries, in terms of labour force, reflects the fast growing importance of the government in the economy of Quebec as well as the increasingly complex nature of business. As a result of this rapid increase in government, business and community labour force, the share of these two industries in the total labour force of Quebec reached 5.6 and 11.6 per cent respectively in 1961, while it was 2.4 and 7.3 per cent in 1931.

The other service industries, except for personal service, since 1931 also increased their share of the total labour force of Quebec. The declining importance of the personal service industry between 1931 and 1951, from 10.1 per cent of the total labour force in 1931 down to 7.0 per cent in 1951, can be partially explained by the low wage rates paid for such services. The trend that can be noticed

in the personal service labour force between 1951 and 1961, is more significant and more representative of the changes that have been experienced by this industry over a longer period of time. Between 1951 and 1961, this industry's share of total labour force increased by 0.7 per cent from 7.0 per cent up to 7.7 per cent. Changing consumer patterns brought on by a rising standard of living are responsible for the growing importance of the personal service labour force since 1951.

The changes that have occurred since 1931 in the industrial structure of the labour force of Quebec, can be summarized by saying that labour has been shifting from the primary to the secondary and tertiary sectors of the economy; as a result the agricultural society that was Quebec's at the beginning of this century has given way to an industrial economy.(9) The importance of these shifts of labour force

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(9) - This transformation of the economy of Quebec has been described in these terms:
"Although the proportion of the labour force in the manufacturing industries, first exceeded that in agriculture in 1951, the total number of employees in the secondary sector, those in manufacturing and construction, plus the very arbitrary proportions of one-half of the non-agricultural labourers, surpassed the total number in the extractive industries of the primary sector by 1931, while the number of employees in the tertiary sector was greater than the number of employees in the primary sector as early as 1911." S. H. Harth, "The Origins of the Labour Relations Policy of the Province of Quebec", McGill University, Montreal, September 1965, unpublished article.

is that they serve as an indicator of the advance of the Province of Quebec's economy through various stages of development. In the words of C. Clark, these movements of the working population are "the most concomittant of economic progress".(10)

Sectoral shifts of labour from the primary to the secondary and tertiary industries have to be compared to what happened during the same period to the sectoral structure of production, if the general forces at work behind them are to be recognized. As will be seen on Page 86 the sectoral distribution of production has experienced little change between 1931 and 1964. This brought Dr. S. Judek (referring to the Canadian experience) to say that:

> From being 600,000-900,000 workers ahead in 1931 and 1941, the material goods sector was trailing the service sector in 1961 by almost 600,000. This suggests that technology and automation may have placed a ceiling on employment in the goods-producing industries. The new technology has profoundly affected the kind of work opportunities available in the future.(11)

That this new technology was also a factor at work behind the changing structure of Quebec's labour force, is illustrated by the fact that a rising agricultural output between 1951 and 1964 has been produced by an agricultural labour

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(10) - C. Clark, The Conditions of Economic Progress, Macmillan, London, 1951, 2nd ed., p. 395.

(11) - C. W. Wilson, S. Gordon, and S. Judek, op.cit., p. 264.

force that has been declining ever since 1941.

(c) The Structure of Production

The transformations experienced by the structure of output are another manifestation of the changing nature of economic activities in Quebec. In order to analyze the changes that have occurred in the composition of total output in Quebec since 1931, data on the Gross Domestic Product (G.D.P.) by industry of origin would be required. Such data are published on a national basis only. It was found (see Table 20 on page 84) that the percentage distribution of Canada's G.D.P. by sectors (e.g. primary, secondary, and tertiary) has not been since 1931 similar to the sectoral distribution of labour income. But the structure of each of these two aggregates have since then experienced changes that were in the same direction. It can be assumed that this was also the case in Quebec and Ontario. On this basis the changes experienced by the structure of output in Quebec can be indirectly studied through the changes in the structure of labour income for which data are available for the period 1947-1964.(12)

Table 21 summarizes the changes experienced by the structure of Quebec labour income since 1947. Labour income

(12) - These data were prepared by the Labour Income Division of the Dominion Bureau of Statistics. They are unpublished estimates.

TABLE 20

PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC PRODUCT AND LABOUR INCOME IN CONSTANT DOLLARS,(a) BY INDUSTRY OF ORIGIN, CANADA, SELECTED YEARS

	1935		1951		1961		1964	
	GDP	Labour Income	GDP	Labour Income	GDP	Labour Income	GDP	Labour Income
Agriculture	20.0	6.1	11.3	1.4	7.5	1.6	7.4	1.4
Forestry	2.0	3.5	2.1	3.4	1.3	2.0	1.3	2.1
Fishing and Trapping	0.8	0.3	0.5	0.2	0.4	0.2	0.3	0.2
Mining	4.4	3.6	4.0	3.3	6.2	4.4	6.3	4.1
Manufacturing	22.1	28.3	29.2	33.2	28.8	33.3	31.4	34.3
Construction	3.5	4.7	5.1	6.7	5.4	6.8	5.0	6.9
Transportation, Storage, and Communication	-	-	8.5	10.5	8.8	10.0	8.9	9.7
Electric Power and Utilities	9.1	11.1	2.0	1.8	4.3	2.5	4.6	2.7
Trade	12.9	15.0	13.6	15.2	13.8	14.2	13.2	14.8
Finance, Insurance and Real Estate	8.9	4.3	7.6	3.7	8.1	3.6	7.7	3.7
Services	12.0	14.0	10.4	11.2	10.0	11.8	9.3	11.6
Government	4.7	9.1	5.2	9.5	5.5	9.7	4.7	8.6
Primary Industries	27.1	13.5	17.9	8.3	15.4	8.2	15.4	7.8
Secondary Industries	25.6	33.0	34.3	39.9	34.2	40.1	36.4	41.2
Tertiary Industries	47.3	53.5	47.8	51.8	50.4	51.7	48.2	51.0

SOURCE: - Dominion Bureau of Statistics, National Accounts Income and Expenditure 1926-1956, Queen's Printer, Ottawa, 1966, Tables 21 and 22.
- Dominion Bureau of Statistics, National Accounts Income and Expenditure 1965, Queen's Printer, Ottawa, 1966, Tables 21 and 22.

(a) Personal estimates, see APPENDIX A.

TABLE 21

LABOUR INCOME IN CONSTANT 1949 DOLLARS, AND
PERCENTAGE DISTRIBUTION BY INDUSTRY, QUEBEC, SELECTED YEARS
(Millions of Dollars)

	1947		1951		1961		1964	
	Labour Income	Per Cent Share	Labour Income	Per Cent Share	Labour Income	Per Cent Share	Labour Income	Per Cent Share
Agriculture	15.2	0.8	11.7	0.5	25.4	0.7	24.6	0.6
Forestry	86.9	4.3	102.0	4.4	68.9	2.0	89.2	2.1
Fishing and Trapping	0.7	-	0.6	-	0.9	-	1.1	-
Mining	34.2	1.7	52.1	2.3	126.2	3.6	150.7	3.7
Manufacturing	824.0	41.1	913.4	39.7	1381.9	39.4	1609.2	38.5
Construction	119.0	5.9	165.4	7.2	225.2	6.4	392.0	7.0
Transportation, Storage, and Communication	204.6	10.1	229.7	10.0	342.2	9.8	384.8	9.2
Public Utilities	23.0	1.1	29.8	1.3	82.1	2.3	118.9	2.8
Trade	260.7	13.0	330.6	14.4	504.3	14.4	620.3	14.8
Finance, Insurance, and Real Estate	78.7	3.9	83.2	3.6	131.4	3.7	162.3	3.9
Services	222.4	11.1	242.1	10.5	408.4	11.7	498.7	12.0
Government	141.7	7.0	140.1	6.1	208.2	5.9	225.3	5.4
Total	2,011.1	100.0	2,300.7	100.0	3,505.1	100.0	4,182.1	100.0
Primary Sector	137.0	6.8	165.8	7.2	221.4	6.3	265.6	6.4
Secondary Sector	966.0	48.1	1108.6	48.2	1684.2	48.2	2020.1	48.3
Tertiary Sector	908.1	45.1	1025.7	44.6	1594.5	45.5	1896.4	45.3

SOURCE: Based on material obtained from Mr. Campbell, Labour Division, Dominion Bureau of Statistics.

in Quebec (in constant 1949 dollars)[13] was 2,011,000 in 1947. The sectoral shares of the total labour income were then 6.8 per cent for the primary, 48.1 per cent for the secondary, and 45.1 per cent for the tertiary sectors. In 1964, these shares were 6.4, 48.3 and 45.3 per cent for the primary, secondary and tertiary sectors respectively. Therefore, there has been little change in the sectoral structure of labour income since 1947. Also, no specific trend is noticeable. This permits the conclusion that the sectoral composition of output in Quebec has remained almost constant since 1947.[14]

The stability of the sectoral structure of production is in sharp contrast to the previously described changing structure of labour force. While the tertiary sector share in the total labour force increased by 7.7 per

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(13) - Implicit price indices were developed for the GDP of Canada for each individual industry. These indices were then applied to labour income by industry for Quebec and Ontario. The use of this technique implies the reliance on the assumption that price changes in Canada since 1931 have been similar to price changes in Quebec and in Ontario. For an assessment of this assumption see Appendix A.

(14) - It is not possible to study the structure of output by each of the component industry through the structure of labour income. Table 20 on page 84 shows that the relationship between labour income and GDP by industry differs from the relationship between labour income and GDP by sector.

cent between 1951 and 1961, its share of the total labour income (and of total output) increased by only 0.9 per cent. The secondary sector share of total labour force decreased by 2.3 per cent between 1951 and 1961, while its share of total income remained the same at 48.2 per cent. During this period, the primary sector experienced a decrease of 5.4 per cent in its share of total labour force and a decrease of 0.9 per cent in its share of total income.

It appears that the main factor behind the changes that have occurred in the sectoral structure of Quebec's labour force (at least since 1947), has been technological changes, and not the "demand-income phenomena" described by C. Clark.(15) As has been said previously, technological changes and automation have placed a ceiling on employment in the primary and the secondary sectors. This is not to say that structural changes are only a supply-induced phenomenon; certain demand factors (e.g., the relationship between growing income and changing consumer habits) may have been at work, but this is not revealed by an aggregative analysis of the structure of total production of Quebec.

The statistics available make it possible to study in a disaggregated form the sector of commodity-production.

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(15) - C. Clark, op.cit., p. 7.

Table 22 on page 89 gives data on the percentage distribution of net value of production (constant 1949 dollars) by industry for the period 1931 to 1964. For this period there are three industries in Quebec that experienced a rate of growth lower than the rate at which total industrial production increased. As a result these three industries, namely, agriculture, forestry, fishing and trapping in 1964 had a lower share of total industrial production (i.e., 8.7 per cent for the three combined) than they had in 1935 (28.9 per cent). The same is true for Ontario, where in 1935, the production of these three industries amounted to 26.4 per cent of total industrial production. In 1964, this percentage share declined to 8.6 per cent.

In 1931, 31.7 per cent of the total net value of production of Quebec originated in agriculture. In 1961, this percentage declined to 7.9 per cent, and in 1964 it was 5.6 per cent. Between 1931 and 1961, the agricultural labour force declined by 40 per cent while the net value of agricultural production increased by 5 per cent. These data support the view expressed earlier, that both demand and supply factors were at work behind the decline in the share of agriculture in the total labour force of Quebec during this period.

TABLE 22

PERCENTAGE DISTRIBUTION OF COMMODITY-PRODUCTION IN CONSTANT 1949 DOLLARS, QUEBEC AND ONTARIO, 1931-64

	1931		1935		1941		1951		1961		1964	
	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario
Agriculture	31.7	34.7	21.9	23.5	15.2	15.1	8.9	10.3	7.9	9.6	5.6	7.4
Forestry	-	-	6.5	2.5	4.9	1.8	5.9	2.0	3.0	1.2	3.0	1.1
Fishing and Trapping	.6	.5	.5	.4	.2	.2	.1	.2	.1	.1	.1	.1
Mining	3.2	6.4	3.2	8.5	4.8	7.5	5.1	3.5	6.3	6.3	6.9	4.5
Manufacturing	62.0	56.7	53.5	54.3	60.5	64.1	62.7	68.7	63.9	66.9	64.5	71.6
Electric Power	2.5	1.7	3.4	1.8	3.0	1.8	4.3	2.7	5.5	4.4	6.0	4.2
Construction	-	-	11.0	9.0	11.4	9.5	13.0	12.6	13.3	11.5	13.9	11.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: TABLE 11.

THE ECONOMIC IMPLICATIONS OF STRUCTURAL DIFFERENCES BETWEEN QUEBEC AND ONTARIO

Supply factors (e.g., increasing productivity resulting from improved methods of cultivation and greater mechanization) have made it possible for Quebec's agricultural production to increase in absolute terms in spite of the decline in agricultural labour force. The declining relative importance of the agricultural labour force also reflects the fact that as income increases, consumers tend to spend a smaller percentage of their income on necessities such as agricultural products and more on durable goods.

Table 13 on page 46 shows that the net value of agricultural production increased by 1.8 percent in Ontario and decreased by 0.3 percent in Quebec between 1931 and 1964. During this period Ontario's real income per capita was higher than Quebec's and increased at the same rate. Hence the "income-demand" factor appears to be only one factor among others that have contributed to the slow growth of Quebec's agriculture since 1931. The non-competitive position of Quebec's agricultural production is another factor. The non-competitiveness of agriculture in Quebec comes from its low farm productivity. An indication of the latter lies in the difference in salaries paid to farm help. In August 1964, the average wage of male farm help per day was $6.60 in Quebec, and $7.40 in Ontario, the Quebec wage

being 89 per cent of the Ontario wage.(16) Labour-intensive exploitation of agriculture accounts in large part for the low product per farm worker; Quebec accounted in 1961 for 27.5 per cent of the farm population of Canada, but only 20.8 per cent of the number of farms, 8.2 per cent of the acerage in farm land and 13 per cent of the number of tractors. There are other social and economic factors that have been responsible for the low rate of growth experienced by agricultural production in Quebec since 1931, and their relative importance is underlined in the concluding part of Chapter III (see page 118).

The forestry industry is another primary industry that has been growing at a slower than average rate in Quebec since 1935. In 1935, 6.5 per cent of the total net value of production of Quebec originated from forestry. In 1961 and 1964, this percentage decreased to 3.0 per cent. Changing technology is one of the factors that have contributed to the relative decline of forestry since 1935. Steel and other mineral and non-mineral metallic products, have gradually replaced wood in certain types of construction and wood-burning has given way to electricity, gas or oil. These same factors have affected the growth of the forestry industry of Ontario between 1935 and 1964. In Ontario,

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(16) - Another indication of agricultural productivity differential between Quebec and Ontario is given in p. 117.

this industry's share of total production which was 2.5 per in 1935, has declined to 1.1 per cent in 1964.

In 1931, 0.6 and 0.5 per cent of the net value of commodity production of Quebec and Ontario respectively originated in the fishing industry. In 1964, both in Quebec and in Ontario, this percentage decreased to 0.1 per cent. What happened to this industry is a typical illustration of the impact of growing income on consumers' spending patterns. The consumption of fish has not increased proportionally with income. Indeed, it has even decreased in absolute terms in Quebec and in Ontario. Other factors, such as increased competition from abroad, depletion of fishing grounds, and lagging technology, have also probably affected the growth of Quebec's fisheries since 1931.

The mining industry is the only primary industry of Quebec that has increased its share of total commodity production between 1931 and 1964. In 1931, this percentage was 3.7 per cent, while in 1964 it was 6.9 per cent. This means that mining production increased faster over this period than total commodity production (969 per cent for mining compared to 315 per cent for the total sector). The growth of mineral production in Quebec has been affected by the growing needs of the United States in the field of minerals. At the same time that iron ore, copper, gold,

and nickel deposits were becoming depleted, new rich sources of supply were being discovered and exploited in northern Quebec, the Gaspe Peninsula and Labrador.(17) That the development of these mining areas has been conditioned by foreign demand is clearly established in the following comment made by H. G. Aitken. In his book, The American Economic Impact on Canada, Aitken says that:

> Quebec-Labrador iron ore deposits are being exploited to serve the United States steel industry.(18)

In the same book, M. Lamontagne accepts Aitken's view when he comments that:

> ... this new mining development, which marked the opening up of Northern Quebec was undertaken by American capital to meet the needs of the United States market.(19)

The mining development that has taken place in Quebec since World War II, resembles what happened in Ontario at the beginning of this century. But since Ontario's mining deposits were exploited at an earlier date, it is understandable

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(17) - G. Gardner, "Développements miniers du Grand-Nord", Actualité Economique, Hautes Etudes Commerciales, janvier-mars 1960, pp. 595-617.
(18) - H. G. Aitken, ed., The American Economic Impact on Canada, Duke University Press, Durham, 1959, p. 10.
(19) - M. Lamontagne, "The American Economic Impact on Quebec", H. G. Aitken, ed., op.cit., p. 90.

that in the last twenty years, the mining industry has been growing more rapidly in Quebec than in Ontario. Since 1931, the mineral production of Ontario increased less rapidly than its total industrial production, and as a result, the share of the mining industry in the total industrial production of Ontario declined to 4.5 per cent in 1964 from 6.4 per cent in 1931 (see Table 22 on page 89).

In 1935, 53 per cent of Quebec's industrial production originated in the manufacturing sector. In 1941, this percentage share increased to 61 per cent. Between 1941 and 1964, manufacturing production continued to increase more rapidly than total industrial production, and as a result, manufacturing production amounted to 65 per cent of total commodity production in 1964. During World War II, the manufacturing industry of Quebec experienced a more rapid growth than that of Ontario.(20) But with the return to peace production between 1945 and 1950, the manufacturing sector of Quebec found it difficult to maintain the rapid growth it had experienced between 1939 and 1945.

The growth of manufacturing in the last twenty years had been higher than that for the whole sector of industrial production mainly because of the rapid progress made by such industries as petroleum and coal products,

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(20) - F. A. Angers, "Progrès industriels du Québec", Actualité Economique, Hautes Etudes Commerciales, juillet-septembre 1953, p. 338.

chemical and allied products, and non-metallic mineral products. These manufacturing industries have grown at a rapid rate since 1945 as changing technology brought an increasing demand for their products. The rapid growth of these industries more than compensate for the lagging progress of other manufacturing industries such as textile, clothing and tobacco products, the growth of which depends mainly on the growth of population.

The electric power industry of Quebec has also, since 1931, experienced a rate of growth more rapid than the rate experienced by the whole sector of commodity production. In 1931, 2.5 per cent of the net value of Quebec's industrial production originated in this industry. In 1964 (see Table 22 on page 89) this percentage was 6 per cent. In Ontario, the same phenomenon occurred, and in 1964 electrical production amounted to 4.2 per cent of the total industrial production, compared to 1.7 per cent in 1931. The growth of the electrical power industry of Central Canada and its growing relative importance since 1931, has been brought on partially by the extension of the benefits of electricity to rural centres, by the growing need of electricity to sustain the growth of industry, and by the increasing use of electrical power by households in Quebec and Ontario.

The construction industry of Quebec, in 1935 contributed to 11 per cent of that province's industrial

production. This percentage share has continuously increased since then, and it reached 14 per cent in 1964. This was also the case in Ontario, at least until 1951, when 13 per cent of this province's industrial production originated in this sector, compared to 9 per cent in 1935, and 11 per cent in 1964. Since 1935, the growth of the construction industry has been dependent of the growth of population, or urbanization, of the extension of government and social services, and of the heavy investments that have sustained the growth of industry during this period. F. A. Angers,(21) and B. Bonin(22) have found that in Quebec, the growth of construction has mainly depended on the growth of population (residential construction) and of government and social services (public construction). In Ontario industrialization has been a more important factor contributing to the progress of the construction industry than was the case in Quebec.

2. Structural Differences between Quebec and Ontario

Tables 23 and 24 on pages 97-98 summarize the changes that have occurred in the economic structure of Quebec and Ontario since 1931. These two tables present in

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(21) - F. A. Angers, ibid., p. 339.
(22) - B. Bonin, "Répartition régionale des investissements depuis la guerre", Actualité Economique, Hautes Etudes Commerciales, Montreal, janvier-mars 1960, pp. 587-590.

TABLE 23

COMPARISON BETWEEN THE INDUSTRIAL STRUCTURE OF LABOUR FORCE OF QUEBEC AND OF ONTARIO, AND COMPARISON OF THE CHANGES EXPERIENCED BY EACH BETWEEN 1931 AND 1961

	Changes in the percentage distribution of labour by industries						Absolute structural differences between Quebec and Ontario			
	1931-1961		1941-1961		1951-1961					
	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	1931	1941	1951	1961
Agriculture	-14.4	-15.3	-13.7	-11.5	-5.7	-3.6	.6	2.5	2.4	.3
Forestry	.7	- .1	- .6	- .4	- .6	- .5	.9	1.9	1.8	1.7
Fishing and Trapping	- .4	- .3	- .5	- .3	- .2	-	.2	.3	.3	.1
Mining	.7	.4	.3	- .4	.1	.2	.6	1.0	.2	.3
Manufacturing	5.3	3.4	.1	- 2.6	-3.1	-5.2	2.4	3.2	2.6	.5
Construction	- .7	- .3	.9	1.1	.7	.1	1.1	.9	.1	.7
Transportation and utilities	1.3	- .5	2.3	1.0	.3	- .7	.9	.4	.1	.9
Trade	3.6	3.9	2.9	2.7	1.4	1.0	1.2	1.7	1.9	1.5
Finance, insurance, and real estate	.9	1.3	1.4	1.4	.8	.8	.2	.6	.6	.6
Community and business services	4.3	4.8	4.1	4.7	3.0	3.6	1.1	1.2	1.2	.6
Personal services	- 2.4	- .8	- 2.2	- 1.3	.7	1.7	1.5	.8	.9	.1
Recreation	.2	.2	.3	.2	.1	.1	.1	.2	.1	.1
Government	3.2	4.7	3.1	4.2	1.4	1.5	.5	.9	1.9	2.0
Total	-	-	-	-	-	-	11.3	15.6	14.1	9.4

SOURCE: Computed from TABLE 19.

TABLE 24

COMPARISON BETWEEN THE STRUCTURE OF INDUSTRIAL OUTPUT OF QUEBEC AND ONTARIO, AND COMPARISON OF THE CHANGES EXPERIENCED BY EACH BETWEEN 1931 AND 1964

	Changes in the industrial distribution of output by industries										Absolute structural differences between Quebec and Ontario				
	1931-1964		1935-1964		1941-1964		1951-1964		1961-1964						
	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	Quebec	Ontario	1935	1941	1951	1961	1964
Agriculture	-26.1	-27.3	-16.3	-16.1	-9.6	-7.7	-3.3	-2.9	-2.3	-2.2	1.6	.1	1.4	1.7	1.8
Forestry	-	-	- 3.5	- 1.4	-1.9	- .7	-2.9	- .9	-	- .1	3.0	3.1	3.9	1.8	1.9
Fishing and Trapping	- .5	- .4	- .4	- .3	- .1	- .1	-	- .1	-	-	.1	.0	.1	.0	.0
Mining	3.7	- 1.9	3.7	- 4.0	2.1	-3.0	1.8	1.0	.6	1.8	5.3	2.7	1.6	.0	2.4
Manufacturing	2.5	14.9	11.0	17.3	4.0	7.5	1.8	2.9	.6	4.7	.8	3.6	6.0	3.0	7.1
Electric Power	3.5	2.5	2.6	2.4	3.0	2.4	1.7	1.5	.5	- .2	1.6	1.2	1.6	1.1	1.8
Construction	-	-	2.9	2.1	2.5	1.6	.9	-1.5	.6	- .4	2.0	1.9	.4	1.8	2.8
											14.4	12.6	14.0	9.4	17.8

SOURCE: Computed from TABLE 22.

a different way what Tables 21 and 22 on pages 85 and 89 are showing. The purpose of these tables is to establish whether the structures of labour force and industrial production of Quebec and Ontario have become more similar since 1931, or whether the differences that have existed in the past have widened rather than narrowed.

Table 23 on page 97 shows that the structure of the labour force changed in the same way in Quebec as in Ontario since 1931, except for transportation and forestry. These two sectors became relatively more important in the economy of Quebec between 1931 and 1964, while in Ontario their combined shares of the labour force declined by 0.6 percentage points. The same is true for the period 1941-1961, except that during this period it was mining and manufacturing which changed in a different pattern from that of Ontario. In Quebec these two industries increased their share of the labour force between 1941 and 1961, while in Ontario their share declined. Between 1951 and 1961, only transportation labour force experienced a change, the direction of which differed in Quebec as compared to Ontario, increasing its share in Quebec while declining in Ontario.

But except for these few exceptions within the sub-periods 1941-1951 and 1951-1961, the industrial distribution of Quebec's and Ontario's labour force has changed in the same manner since 1931. In both provinces the primary

industries' share (except for mining in Quebec) of the total labour force decreased since 1931, while manufacturing and the tertiary industries increased their relative importance as a source of employment. As a result of this similarity of changes, the structure of Quebec's labour force has become more like Ontario's. The four last columns of Table 23 on page 97 indicate that in 1931, the (absolute) sum of the structural differences between Quebec's and Ontario's labour force was 11.3 percentage points. In 1941, this total increased to 15.6 but in 1951 and 1961, it was 14.1 and 9.4 respectively.

Table 24 on page 98 is similar to Table 23 except that it summarizes the changes experienced by the structure of industrial production of Quebec and Ontario since 1931. The first column of Table 24 shows that between 1931 and 1964 all industries except mining, have changed in the same direction in Quebec and Ontario. The share of the mining industry in total industrial production increased by 3.7 percentage points in Quebec between 1931 and 1964, while in Ontario it declined by 1.9 percentage points. As the second and third columns of Table 24 show, the same is true for the periods 1935-1964 and 1941-1964. Between 1951 and 1964, construction was the only industry in Quebec experiencing a change in its relative importance that was opposite to what was happening to this

industry in Ontario. Construction, between 1951 and 1964, increased its share of total industrial production of Quebec, while in Ontario this share declined.

Since 1961, the industrial structure of Quebec changed in a different direction ~~of~~ that of Ontario. The fourth column of Table 24 on page 98 indicates that between 1961 and 1964, three industries - mining, electric power and construction became relatively more important in relation to total industrial production in Quebec, while in Ontario the combined share of these three industries decreased by 2.6 percentage points. As a result, since 1961, the structure of production in Quebec and Ontario ceased to evolve toward a state of greater competition. The resource base of Quebec (mineral and hydro-electric resource) seems to have become a more important locational factor relative to Ontario, than it was during the years 1931 and 1961.

That the production structure of Quebec and Ontario prior to 1961 was becoming more integrated and complementary is illustrated by the last four columns of Table 24. In 1935, the "absolute" sum of the structural differences between Quebec and Ontario was 14.4 percentage points. In 1951 and 1961, these differences declined to 14.0 and 9.4 percentage points, in 1964, it increased to 17.8.

A similar trend toward complementarity and integration between Quebec's and Ontario's production structure was noted by André Raynauld in his study of the manufacturing sector of Quebec for the years 1935 to 1955.(23) More specifically, Raynauld found that as far as the low growth light-consumer-goods industries(24) are concerned, the structure of the two provinces have evolved in the same direction and has become more similar between 1935 and 1955.(25) But for the more rapid growing capital-goods and consumer-durable-goods industries, the difference between Quebec and Ontario has increased between 1935 and 1955. Such industries as wood and paper products, printing, non-ferrous metal and non-metallic mineral products, and coal and petroleum products industry have become more concentrated in Quebec. Ontario itself, has increased its predominant position in the field of chemical and allied products, iron and steel products, transportation equipment, and electrical apparatus and supplies.

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(23) - A. Raynauld, op.cit., pp. 97-101.
(24) - Under this category, Raynauld includes foods and beverages, tobacco and tobacco products, rubber and leather products, and textile and clothing industries.
(25) - Table 25 on page 103 shows that this trend has persisted since 1955.

TABLE 25

PERCENTAGE DISTRIBUTION OF VALUE ADDED FOR MANUFACTURING BY INDUSTRY GROUP, QUEBEC AND ONTARIO, 1963

	Quebec	Ontario
Food and beverage	14.3	12.8
Tobacco products	2.6	.6
Rubber	1.2	2.2
Leather	2.1	1.1
Textile	7.8	2.9
Knitting Mills	1.6	.7
Clothing	7.5	1.7
Wood	2.9	1.5
Furniture and Fixtures	2.2	1.6
Paper and allied	11.6	6.2
Printing, Publishing and Allied	5.2	5.1
Primary Metal	6.3	11.9
Metal Fabricating	6.4	8.4
Machinery	2.3	5.0
Transportation Equipment	4.9	13.1
Electrical Products	5.1	8.7
Non-Metallic Mineral Products	3.8	3.3
Petroleum and Coal Products	2.3	1.4
Chemical and Chemical Products	7.0	7.8
Miscellaneous Manufacturing	2.9	4.0
Total	100.0	100.0

SOURCE: -Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section C - 1963, Queen's Printer, Ottawa, 1966, p. 14.
-Dominion Bureau of Statistics, Manufacturing Industries of Canada, Section D - 1963, Queen's Printer, Ottawa, 1960, p. 14.

André Raynauld explains that the growing difference (for the period 1935 and 1955) between Quebec's and Ontario's manufacturing sector in the field of capital and durable consumer-goods, is due to the fact that manufacturing in each of these provinces, has developed along the line of the particular resources endowment (non-ferrous metal and non-metallic mineral in Quebec) and comparative advantages of the province concerned.

Whatever the trend taken by the structural changes that have occurred in Quebec's and Ontario's economy since 1931, the fact remains that there were - and still are - basic structural differences between the two provinces. As illustrated in Table 19 on page 76 the relative importance (in terms of labour force) of the primary industries (excluding mining) and construction since 1931 has always been greater in Quebec than in Ontario. On the other hand, the manufacturing and service industries have been more concentrated in Ontario than in Quebec. Among the services industries there are two industries - community and business services and personal services - that have been traditionally more important as a source of employment in Quebec than in Ontario.

Within the commodity-production sector, the relative importance of mining (only since 1941) and of forestry, fishing, electric power and construction

(since 1931-1935) has been greater in Quebec than in Ontario. During the period 1931-1964, the manufacturing industries of Ontario always contributed to a greater percentage of the total industrial output than was the case in Quebec. André Raynauld, in his analysis of the economy of Quebec 1935-1955,(26) established that Quebec in the manufacturing field specialized in the production of light consumer goods (e.g., foods, textile, tobacco, etc.) and of such products as non-metallic mineral, non-ferrous metal, and coal and petroleum products. During the same period, Ontario's manufacturing structure was characterized by the predominance of such industries as iron and steel, machinery, transportation equipment and chemical products. In 1963 (see Table 25 on page 103) this was still the case. Over the period 1931-1963, Quebec remained mainly a producer of light consumer goods, and Ontario a producer of durable and heavy capital goods.

The location theory in economics explains that both supply and demand factors determine the distribution of industry between regions.(27) The demand factors include such factors as proximity to markets, the nature of the existing market of the area considered, and the structure of

(26) - A. Raynauld, op.cit., p. 97.
(27) - The main arguments are summarized in H. S. Perloff, How a Region Grows, Committee for Economic Development, New York, 1963.

industry prevailing there. The supply factors include the availability of an adequate labour market, the sources of energy and raw materials, the social services available, etc. The industrial development of Quebec and Ontario followed a different pattern because each of these locational factors were present in varying degrees in each of the two provinces.

Ontario has become the Canadian leading producer of metallic mineral and primary steel products as well as heavy equipment mainly because of its advantageous geographical position at the center of the Canadian market and in the heart of the heavily industrialized American Great Lakes area. This view is shared by Maurice Lamontagne. According to him:

> With the National Policy of Macdonald and with the development of trade between Eastern and Western Canada, location factors became greatly favourable to Ontario. Quebec lost the geographical advantages it had enjoyed during the previous period. Ontario was at the center of the Canadian market and had easy access to these areas in the U.S. which were producing coal and iron ore. These geographical factors meant when the National Policy was initiated, that Ontario was the ideal location for the new manufacturing industries, and especially for heavy industries.(28)

Among the other factors that have influenced Ontario's industrial development, are the particular types of resources with which the Province has been endowed.

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(28) - Maurice Lamontagne, "The American Economic Impact on Quebec", The American Economic Impact on Canada, op.cit., pp. 93-94.

Due to the existence of large and rich deposits of such minerals as iron ore, platinum, gold, copper, graphite, quartz, salt, lime and gravel, Ontario has become by far the leading Canadian producer in these fields.(29) Finally, geographical factors, as well as the existence of an adequate supply of skilled workers, explain why Ontario leads in the production of motor vehicles and parts, agricultural implements, electrical equipment, boilers and engines, and chemical products.(30)

Other specific factors of a technological nature explain why certain industries have developed in Ontario rather than in Quebec. J. H. Dales in his doctoral dissertation, Hydroelectricity and Industrial Development, Quebec 1808-1940,(31) explains why the steel industry is far more concentrated in Ontario than in Quebec. According to Dales, the determinant factors have been the location of iron ore deposits and the energy situation in each province.

Dales argues that until recently, the economically exploitable iron ore deposits were mainly located in Ontario.

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(29) - Private and Public Investment in Canada 1926-1951, Department of Trade and Commerce, King's Printer, Ottawa, 1951, p. 131.
(30) - Ibid., p. 131.
(31) - This thesis was published in 1959 by Harvard University Press. A summary of the main arguments are presented in: J. H. Dales, "Fuel, Power and Industrial Development in Central Canada", American Economic Review, May 1953, pp. 181-182.

Transportation costs would have made any iron ore development in Quebec too expensive. On the other hand Quebec ranks behind Ontario in the availability of coal - the prime source of heat in both provinces - and American coal at the Port of Montreal is more expensive than at Ontario ports. Moreover, Nova Scotia coal, which is made competitive in Quebec through federal subsidies, is of an inferior quality for many industrial purposes, e.g., iron and steel production. Since this latter production depends on coal for heat - electricity would have been more costly and less efficient under the technological conditions prevailing at the time - Ontario was the ideal location for the development of this industry in Canada. Moreover, the early development of the iron and steel industry in Ontario was going to give to this Province another advantageous locational factor which Quebec did not enjoy, i.e. the supply of processed iron and steel materials required by the heavy equipment industries.

The peculiarities of Quebec's industrial structure reflect the fact that the Province has drawn its economic strength from extensive mineral, forest, and water resources.(32) The abundance of these natural resources explains to a large extent why the mining, forestry, fisheries,

(32) - Private and Public Investment in Canada, op.cit., p. 128. This view is accepted by P. Harvey, "The Economy of Quebec", The University of Toronto Quarterly April 1958, p. 337.

and electrical power industries are relatively more important components in the industrial structure of Quebec than they are in Ontario.

The leading manufacturing groups in Quebec are the light consumer goods industries, and such industries as the non-metallic mineral products industries. The importance of the non-metallic mineral industries in Quebec can be explained by the fact that Quebec is by far the leading Canadian producer of such mineral products as asbestos, feldspar, tellurium, mica, selenium and clay.(33) Also, since the known Canadian deposits of ilmenite, molybdenite, and iron oxyde are almost exclusively located in Quebec, this Province is the most important Canadian producer of the metallic products derived from these minerals.

Other important factors that have affected the development of Quebec's manufacturing structure are the economic changes that took place in the United States at the beginning of this century. With the progressive shifting of the economic center toward the Great Lakes, the Province of Quebec, because of its geographical position, found itself

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(33) - The non-metallic mineral products rely heavily on electricity for energy. The abundance of cheap electric resources in Quebec also explains the importance of the non-metallic mineral group in that Province. M. Brouillette, "L'industrie manufacturière au Canada", Actualité Economique, juillet-septembre 1964, p. 280.

at the outer edge of the great marketing areas. As was seen earlier, these changes gave an advantage to Ontario and allowed this Province to develop its heavy industries. Quebec itself was left with two locational factors: its abundant and cheap supply of human labour, and its natural resources.(34) Electricity being abundant and available at low cost, labour being also abundant and cheap as a result of the rapid increase in population, the labour-using light consumer-goods industries were encouraged to locate in Quebec.

The direction of American investment has also affected the industrial development of Quebec and Ontario. As mentioned by Lamontagne,(35) American capital invested in Canada at the beginning of this century was mainly channelled into such industries as automobile, electrical appliances and other semi-durable goods industries. The Americans selected Ontario for its geographical location. But before World War I only a small fraction of American capital invested in Ontario was invested in the sector of resources industries. It was only after World War I, that the Americans felt the need to invest heavily in the sector of resources.(36) Then

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(34) - Pierre Harvey, ibid., p. 337.
(35) - Maurice Lamontagne, "The American Economic Impact on Quebec", op.cit., p. 95.
(36) - Maurice Lamontagne, ibid., p. 96. This view is shared by H. S. Aitken, "The Changing Structure of the Canadian Economy", The American Economic Impact on Canada, op.cit., pp. 9-11.

after World War I, the greatest part of the inflow of capital coming from the United States was channelled into the primary producing sector, particularly the non-ferrous metals, aluminum and wood products. This second wave of American investment was to have a favourable impact on Quebec chiefly because of this Province's resource endowment.

3. Structural Differences and Income Differential between Quebec and Ontario

It was established in Chapter II that after the differences in the degree of manpower utilization have been taken into account, there was still an unexplained 10 per cent (in 1931) and 13 per cent (in 1961) income gap between Quebec and Ontario. In other words, 38 per cent (in 1931) and 52 per cent (in 1961) of the average income differential between Quebec and Ontario was caused by factors other than differences in labour force participation rate, and differences in employment rate. These other factors can be collectively called the structural differences. Among the latter, the more important are the differences in the "mix" of occupations, differences in the industrial structure of the labour force, and differences in the wage structure.

As can be seen in Table 18 on page 71 the white collar occupations were relatively more important in Ontario than in Quebec in 1931 and 1961, while the blue collar (e.g., construction workers and labourers) and the primary

occupations had a greater percentage share of Quebec's labour force than Ontario's. These differences in the "mix" of occupations might have been partly responsible for the difference between Quebec's and Ontario's average earnings per employed person. In other words, it is possible that proportionately larger numbers of workers in the more highly skilled and better-paid occupations might have accounted for the higher average earnings in Ontario? In his study of interregional differences in earnings in Canada, F. T. Denton analyzed the economic implications of differences in the "mix" of occupations.(37) He came to the conclusion that these latter differences account for little of the variation in average income between the regions of Canada. His analysis of 55 occupational groups, based on the 1961 Census, indicates that the interregional disparity of earnings "is not reduced in any considerable degree when allowance is made for differences in occupational "mix"".(38)

As seen previously in this Chapter the distribution of labour force by industry differs between Quebec and Ontario. It is possible that these differences in the industrial structure of the labour force have been and still

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(37) - F. T. Denton, An Analysis of Interregional Differences in Manpower Utilization and Earnings, Staff Study No. 15, Economic Council of Canada, Queen's Printer, Ottawa, 1966.

(38) - Ibid., p. 10.

are responsible for a part of the average income per employed person between Quebec and Ontario. An area in which there is a concentration on low-wage industries naturally would tend to have a lower weighted average income than one in which there is a concentration of high-wage industries. Finally, the wage structure can differ between two regions; in the same industry, the same type of labour could be earning more in one area than in another.

The economic implications of differences in the structure of labour force and of wage levels can be quantitatively analyzed through the "standardization" technique. The term "standardization" refers to the application of the earning structure of a region (e.g., Quebec) to the labour force structure of the other more prosperous region (e.g., Ontario). The weighted average obtained is the overall average earnings that would have been received by the first region if its labour force structure had been identical to the more prosperous region. The technique can also be used to establish what would have been the average earnings in the poorer region, given its present industrial structure, if there had been no inter-industry wage differentials between the two regions.

This technique was applied to the 1931 and 1961 Census data and the results are summarized in Table 26 on page 114. It was found that the average "weighted" earning

TABLE 26

QUEBEC-ONTARIO COMPARISON:
EFFECT OF DIFFERENCE IN
INDUSTRY EMPLOYMENT AND EARNINGS STRUCTURE

	1931			1961		
	Male	Female	Total	Male	Female	Total
1. Average Ontario annual earnings per employed person	1,000	621	915	3,977	2,113	3,412
2. Average Quebec annual earnings per employed person	908	491	809	3,461	1,898	3,027
3. Difference (1 minus 2)	92	130	106	516	215	385
4. Average Quebec annual earnings per employed person, weighted by Ontario employment structure	954	503	853	3,576	1,960	3,087
5. Difference (4 minus 2)	46	12	44	115	62	60
6. Average Quebec annual earnings per employed person, weighted by Ontario earnings structure	966	579	874	3,881	2,083	3,381
7. Difference (6 minus 2)	58	88	65	420	185	354
8. Quebec as percent of Ontario (2 as per cent of 4)	91	79	88	87	90	89
9. "Ontario employment weighted" Quebec as per cent of Ontario (4 as per cent of 1)	95	81	93	90	93	90
10. "Ontario earnings weighted" Quebec as per cent of Ontario (6 as per cent of 1)	97	93	96	98	99	99
11. Percentage of difference in average annual earnings per employed person explained by Ontario weighting of Quebec industry employment structure (5 as per cent of 3)	50	9	42	22	29	16
12. Percentage of difference in average annual earnings per employed person explained by Ontario weighting of Quebec industry earnings structure (7 as per cent of 3)	63	68	61	81	86	92

SOURCE: -This table summarizes information obtained by the application of the standardization technique to the 1931 and 1961Census data on wage earners by industry. See APPENDIX B.
-Dominion Bureau of Statistics, 1931 Census of Canada, King's Printer, Ottawa, 1933, Vol. V, Tables 14 and 27.
-Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1964, Vol. III, Table 28.

of wage earners of Quebec and Ontario was $809 and $915 respectively in 1931, the Quebec's average being 88 per cent of Ontario's. In 1961, average earning was $3,027 in Quebec and $3,412 in Ontario, the Quebec average being 89 per cent of Ontario's.

If the employment structure of Quebec had been the same as in Ontario, the average earning of Quebec's workers would have reached $853 in 1931, and $3,087 in 1961. But given their industrial distribution (or structure), and applying to it the earnings structure of Ontario, the average earning of Quebec's workers would have been $874 in 1931 and $3,381 in 1961.

These "weighted" average earning figures obtained through standardization reveal that in 1931, 41 per cent of the variation between average earning for Quebec and Ontario resulted from the differences in the employment structure that existed then between the two provinces. Quebec's wage earners being more concentrated in low paying industries, their average earning was depressed below the average earnings of Ontario's wage earners which were themselves more concentrated in high-paying industries. In 1961, the differences in the employment structure of Quebec and Ontario were responsible for no more than 15 per cent of the variation in average earning between them. Over the period 1931-1961, this type of structural differences has therefore

become a less important contributing factor to the income differential between the two provinces. It will be recalled (see page 99) that during this period the employment structure of Quebec and Ontario has changed in the same direction and that it is more similar now (in 1961) than it was in 1931.

The important fact revealed by Table 26 on page 114 is that the intra-industry earning differentials between Quebec and Ontario in 1931 and in 1961 were more important than the differences in the structure of employment as a factor contributing to the income gap between Quebec and Ontario. Indeed 59 per cent in 1931 and 85 per cent in 1961 of this gap between Quebec's and Ontario's average earning can be attributed to intra-industry earning differentials, compared to 41 and 15 per cent for the employment differences.

Of all the factors already considered, the intra-industry earning differentials appear to be the most important single contributing factor to the income disparity between Quebec and Ontario. Their importance warrants that the main causes behind them be analyzed in depth. Due to the particularly depressed state of agriculture in Quebec, there is further need to consider the factors that may have contributed to the farm income differential between Quebec and Ontario.

In 1951, 48 and 29 per cent of Quebec's and Ontario's farms respectively were producing agricultural products valued at less than $1,200. In 1961, 35 per cent of the total farms of Quebec were still producing less than $1,200 of agricultural products, while in Ontario this percentage had decreased to 26 per cent.(39) Another indication of the differential of agricultural income existing between Quebec and Ontario is obtained in comparing income received by wage earners in the two provinces. In August 1964 the average wages of male farm help per day was $6.60 with board in Quebec and $7.40 in Ontario.(40)

It has been said(41) that the problem of agriculture in Quebec, i.e., the low level of farm income can be mainly explained by: (a) unfavourable climate conditions; (b) the low quality of Quebec's agricultural soil; and (c) the small size of farms. It is generally accepted that factors (a) and (b) are partially responsible for the difference in agricultural income between Quebec and Ontario. As for factor (c), before it can be said to have contributed to

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(39) - Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa, 1963, Bulletin 5.2-5, Table I.

(40) - Dominion Bureau of Statistics, Farm Wages in Canada, Queen's Printer, Ottawa, August 1966, p. 1.

(41) - L. P. Poulin, "Le probleme agricole quebecois", Relations, Montreal, octobre 1966, pp. 262-264.

the gap in agricultural income between Quebec and Ontario, it must be established that Quebec's farms are smaller in size than Ontario's.

An analysis of the 1961 Census data on the number and area of all (census) farms in Quebec and in Ontario reveals that the average size of farms does not differ much between the two provinces. In 1961, the average size of a farm in Quebec and Ontario was 148 and 155 acres respectively.(42) Moreover, 61 per cent of Quebec's farms had more than 100 acres while in Ontario only 54 per cent of the farms were bigger than 100 acres.(43) Therefore, the small size of agricultural undertakings in Quebec can be a factor of low agricultural income but it cannot be said to be a factor contributing significantly to the income differential with Ontario.

It is probably the low level of agricultural productivity that is the main cause of the low level of agricultural income in Quebec. An indication of the comparative level of agricultural productivity in Quebec and in Ontario is obtained by an analysis of the value of products sold per total weeks of paid and unpaid labour. In 1961, the value

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(42) - Data computed from 1961 Census of Canada, Bulletin 7.2-5, Table I.

(43) - Data computed from 1961 Census of Canada, Bulletin 5.2-1, 5.2-2, p. 2.1.

of agricultural products sold on all farms per week of paid and unpaid labour was $128 in Quebec and $212 in Ontario, the Quebe figure being 60 per cent of that of Ontario.(44) One of the causes of the differential in agricultural productivity between Quebec and Ontario is due to differences of total capital invested and stocks of equipment and machinery. In 1961, the number of farms in Quebec was 79 per cent of that of Ontario, but the total value of agricultural capital and the total value of the stock of machinery and equipment was 43 and 52 per cent respectively of that of Ontario.(45) The agricultural problem of Quebec appears then to be one of intensity of cultivation rather than one of size of farms.

In the non-agricultural sector the income received in Quebec is also generally lower than what is received in Ontario for the same industry. In some industries this income differential is very large while in others it is very small. In 1964, hourly-rated wage-earners in manufacturing received an average weekly wage of $87.61 in Ontario and $75.81 in Quebec; the average wage received in Quebec was therefore only 87 per cent of the wage received in Ontario.

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(44) - Based on: Dominion Bureau of Statistics, 1961 Census of Canada, Queen's Printer, Ottawa 1963, Bulletin 5.2-1, Table 20, and Bulletin 5.2-2, Table 22.

(45) - Based on: 1961 Census of Canada, op.cit., Bulletin 7.2-5, Table 1.

In the service industry (i.e., hotels and restaurants; laundries; dyeing, cleaning and pressing plants, and recreational services) the average weekly wage received was the same in both provinces, or $44.86 in Ontario and $44.06 in Quebec.(46)

The disparity in non-agricultural income between Quebec and Ontario has been in the past explained mainly in reference to: (a) the historical disequilibrium on Quebec's labour market; (b) the lower productivity of Quebec's work force; and (c) the differences in the educational level reached by the labour force in Quebec and Ontario.

As was said earlier, with the National Policy of Macdonald and with the development of trade between Eastern and Western Canada, as well as with the growing importance of the American Great Lakes industrial area, Quebec was left with only two favourable location factors: its natural resources, and an abundant supply of cheap labour resulting from a rapid natural increase in population. As early as 1880, Quebec became known as the "cheap" labour Province of Canada.(47) Labour-using industries were induced to locate in Quebec because they could afford to pay only low wages.

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(46) - Dominion Bureau of Statistics, Review of Man-Hours and Hourly Earnings 1945-64, Queen's Printer, Ottawa 1965, p. 10.

(47) - P. Harvey, "Les salaires dans la Province de Québec", Actualité Economique, Hautes Etudes Commerciales, Montréal, juillet-septembre 1955, pp. 296-300.

After the initial period of industrialization, i.e., after 1919, labour force continued to increase more rapidly in Quebec than in Ontario, aggravating therefore the earlier disequilibrium on the labour market.

The early wage disparity between Quebec and Ontario came to develop forces that have worked since then to perpetuate the relative economic disadvantages of Quebec. Harvey(48) maintains that since wages were lower in Quebec a small percentage of this province's income was spent on non-necessary consumption. This fact might be one of the reasons why the high-wage-consumer durable goods industries have tended to locate in Ontario rather than in Quebec. Moreover, as Parizeau(49) pointed out, wage negotiations are often influenced by the level of wages prevailing in the area. Then, if a high-productivity industry locates in an area where wages are predominantly low, it will be inclined to pay a rate lower than what it could pay or pays outside the area.

Sylvia Ostry also believes that the existence of surplus labour in Quebec is one of the most important factors in explaining the wage differentials between Quebec

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(48) - P. Harvey, Ibid., p. 300.
(49) - J. Parizeau, "Les progrès industriels du Québec", Actualité Economique, Hautes Etudes Commerciales, Montreal, octobre-décembre 1959, p. 400.

and Ontario. After having noticed that the wage differential for high-wage industries is much smaller than for low-wage industries, she comments that:

> It seems unlikely that the low-wage industries have a much lower productivity in Quebec than in Ontario, while the high-wage industries are equally productive in both provinces. A more reasonable explanation is that the downward pressure exerted by the relatively greater supply of labour in Quebec falls most heavily on the low-wage industries because the high-wage industries are for a variety of reasons (unions, oligopolistic markets, etc.) more "protected".(50)

The Economic Council of Canada in its Second Annual Review, maintains that interregional differences in productivity are one of the main factors contributing to regional wage disparities. As a rough measure of regional productivity differentials, the Council uses a comparison of average earned income per employed person. Over the period 1960-1964, earned income per employed person averaged $3,480 in Quebec and $4,120 in Ontario, the Quebec figure being 84 per cent of that of Ontario.(51) Another crude index of regional differences in labour productivity is a comparison of value added per man-year in the manufacturing

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(50) - S. W. Ostry, "Inter-Establishment Dispersion of Occupational Wage Rates, Ontario and Quebec, 1957", in Canadian Journal of Economics and Political Science, University of Toronto Press, Toronto, Vol. 26, 1960, p. 283.

(51) - Economic Council of Canada, Towards Sustained and Balanced Economic Growth, Second Annual Review, Queen's Printer, Ottawa 1965, p. 117.

sector. In 1964, value added (constant dollars) per man-year in manufacturing was $3,177 in Quebec and $3,928 in Ontario, the Quebec figure being 81 per cent of that of Ontario.(52)

One of the sources of interregional disparities in productivity (and earnings) is the difference among regions in the stock of capital, its average age and degree of utilization. Generally, the greater the quantity and quality of physical capital that a worker in a given industry has at his disposal, the higher his productivity tends to be. Data on capital stocks are missing, but the Economic Council has tried to evaluate the interregional differences in capital stock by comparing annual rates of new investment per person in each province, averaged in constant dollars for the period 1951-1964.(53) It was found that over this period, total investment per capita in Quebec averaged 83 per cent of that of Canada while that of Ontario has maintained an average of 105 per cent. During the same period, business investment per capita in Quebec and Ontario has averaged 81 and 104 per cent respectively of business

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(52) - See Table 9 on page 39.
(53) - Economic Council of Canada, Towards Sustained and Balanced Economic Growth, Second Annual Review, Queen's Printer, Ottawa 1965, p. 120.

investment per capita in Canada. An estimate of the stock of capital in manufacturing was established to check the above conclusions. It was found that in 1964 the index of machinery and equipment per person was 90 in Quebec, 145 in Ontario, Canada being 100. On these findings, the Council comments:

> The limitations of the data do not permit a full evaluation of the influence of capital inputs on interregional income disparity. Nevertheless, the comparisons do indicate that the regional groupings for capital input are generally the same as those defined by other factors accounting for interregional income disparity.(54)

As in the case of capital input, differences among regions in the level of education and skill attained by the labour force were found(55) to have affected interregional differences in income earned per employed person. The Economic Council calculated that in 1961, 24.7 and 29.2 per cent of the labour force in Quebec and in Ontario respectively had four to five years of high school and up; 51.6 and 61.8 per cent of the labour force in Quebec and in Ontario respectively had more than one year of high school. Finally, 9.2 and 4.2 per cent of the labour force in Quebec and in Ontario had less than five years of primary school

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(54) - Ibid., p. 122.
(55) - This was done by the Economic Council of Canada in relation to the income differential between Canada and the United States; ibid., p. 117.

in 1961.(56) Since higher average earnings accrue to those who have higher levels of educational training, it is possible that a part of the wage and earning differential between Quebec and Ontario, could have been caused by the levels of education and skill attained by the labour force in each province. Furthermore, the relatively poorer structure of educational attainment in a region (e.g., Quebec compared to Ontario) might have failed to "support or attract those industries and activities which increasingly rely upon an educated and skilled work force."(57)

There are other factors that might have contributed to the wage (and earning per person employed) differential between Quebec and Ontario. Among these, the different degree of urban concentration in each province is often mentioned. The population of Ontario is more concentrated in large urban areas than is the population of Quebec. In 1961, 66 and 54 per cent of the urban population of Ontario and Quebec respectively was living in cities of 30,000 or more.(58) According to Harvey, it was established that in the United States and in Canada, there is a positive correlation between income and the size of the community.(59)

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(56) - Ibid., p. 118.
(57) - Ibid., p. 119.
(58) - The urban population is here defined as population of incorporated cities and towns of 1,000 or over. 1961 Census of Canada, Bulletin 7.1-2
(59) - P. Harvey, op.cit., p. 305.

Small towns in Quebec are spread out over the territory and their labour market, on the demand size, is often dominated by a single big company or by small marginal firms.

It has also been said that differences in the age structure of labour force in two regions could be a factor of wage differential between them. André Raynauld analyzed this aspect and found that in 1951, 71 per cent of the male labour force in Quebec was younger than 45 years of age, while in Ontario, this percentage was 65 per cent. Raynauld argues that this difference is too small to have contributed significantly to the wage (and earned income per employed person) differential between Quebec and Ontario.(60) This view is shared by F. T. Denton.(61)

Raynauld mentions two other factors that might explain why wages are lower in Quebec than in Ontario. Raynauld studied thirteen manufacturing sectors in Quebec and Ontario, relating the wage rates paid in 1955 in these industries to their degree of labour union penetration.(62) He found that in general the wage differential is larger in these industries where the Canadian labour union penetration rate is the lowest. Nevertheless, Raynauld recognizes that

(60) - A. Raynauld, op.cit., p. 262.
(61) - F. T. Denton, op.cit., p. 12.
(62) - A. Raynauld, op.cit., pp. 245-246.

more research will have to be done on this subject if the impact of trade unionism on wage differential is to be accurately assessed. Finally, Raynauld has correlated the size of plants and the wage levels in Quebec and Ontario, in order to know if the smaller size of Quebec's industrial enterprises could be responsible for a part of the wage disparities between these two provinces. He found that industrial enterprises are usually smaller in Quebec than in Ontario.(63) In 1955, the thirty-three industries included in his analysis had an average number of 35 and 46 employees in Quebec and Ontario respectively. Value added per plant was $215,000 and $333,400 in Quebec and Ontario respectively. Raynauld demonstrated that the intra-industry wage differential is usually larger in these industries where Quebec's disadvantage (in terms of the size of the industry) is the highest. He admits though that his analysis is incomplete and that more research will have to be done. He mentions that at this stage, it can only be said that there seems to exist a relationship between the size of industrial firms and wage differentials.

This analysis of the factors that are responsible for the wage disparities between Quebec and Ontario can be summarized in a demand and supply framework. Wage-fixing

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(63) - Ibid., p. 220.

is "largely" affected by the demand and supply conditions prevailing on the labour market. The demand for labour is determined by its productivity while the supply of labour depends on the growth of population and the willingness of this population to seek employment. Productivity of labour is affected by the quality and quantity of the capital stocks at the workers' disposal, as well as the level of education and skill attained by them. Surplus of labour, lower level of education and training, and lower capital-labour ratio, are all factors that have contributed to the wage disparities between Quebec and Ontario.

CHAPTER IV

1. The Facts

The objectives of the analysis presented in this thesis were:

(1) to describe in both quantitative and qualitative terms the growth of the economy of Quebec since 1931;

(2) to establish if the Province of Quebec has shared adequately in the economic growth of Canada since 1931;

(3) to find out whether Quebec has narrowed the income gap known to exist between her and Ontario;

(4) to explain the reasons why average income is lower in Quebec than in Ontario, with special reference to the structural differences between these two provinces.

It was established that over the period 1931-1964, the population increased faster in Quebec than in Canada and in Ontario. But the differential in growth rates narrowed at the end of the period with birth rate in 1964 being actually lower in Quebec than in Canada and in Ontario. During this same period the labour force increased almost at the same rate in Quebec as in Ontario with these two provinces experiencing a more rapid rate of increase of

labour force than in Canada.

The analysis revealed that between 1931 and 1964, industrial production increased as rapidly in Quebec as in Ontario and Canada. It is true that at times (i.e. between 1951-1964) the growth of production in Quebec fell short of the Canadian average, but in the overall picture Quebec participated fully in the Canadian industrial prosperity since 1931.

The industrial growth experienced in Canada, Quebec and Ontario since 1931 has resulted in rising real per capita income. This real improvement in economic welfare was achieved in spite of a reduction in the number of hours worked. The rise of personal income over the period was a little more rapid in Quebec than in Ontario but due to population growth this was insufficient for per capita income in Quebec to reach the level of Ontario.

The economic growth experienced in Quebec and Ontario since 1931 transformed the economic structure of these two provinces. Both in Quebec and in Ontario, as well as in Canada, the trend towards urbanization was maintained throughout the period, except temporarily during the late 1930's. Also during this period there have been shifts of labour from one sector of the economy to another. Both in Quebec and in Ontario, the secondary and tertiary sectors became relatively more important as a source of

employment and production. But this trend was more pronounced in Ontario than in Quebec where mining, which is a primary industry, has gained prominance since 1931.

In 1931 Quebec was lagging behind Ontario and Canada as its share of the indicators most characteristic of economic activity, such as employed labour force, value of industrial production and investments, was lower than its share of the Canadian population. This analysis has established that the economic growth Quebec experienced since 1931, though at times more rapid than in Canada and in Ontario, was not rapid enough to correct the imbalance suffered by this province. Some progress was made but in 1964, while Quebec accounted for 29 per cent of Canadian population, it accounted for 28, 26, 24 and 26 per cent of Canada's employed labour force, investments, industrial production (in 1963), and personal income respectively.(1) The situation in Ontario shows exactly opposite characteristics; there the population figure is proportionately lower than the indicators.

As a result of these persisting basic weaknesses of the economy of Quebec, the citizens of that province are still not enjoying a standard of living as high as that of Ontario. In 1964, per capita personal income as compared with Canadian average was 88 per cent in Quebec while it was

(1) Government of Quebec, Report of the Royal Commission on Taxation, Queen's Printer, Quebec, 1965, p. 36.

117 per cent in Ontario. It was also found that between 1931 and 1964 per capita income in Quebec oscillated between a low of 59 per cent and a high of 64 per cent of that of Ontario. Since 1950, this ratio increased from 62 to 64 per cent. Such a rising trend in the ratio had developed in the past but was of short duration.

More than 60 per cent (in 1931) and close to 50 per cent (in 1961) of the income gap between Quebec and Ontario can be explained due to differences in the employment-population ratio; in Quebec a smaller percentage of the total population is gainfully occupied than is the case in Ontario. The remaining part of the gap appears to be mainly a function of productivity differentials and variations in the structure of employment between the two provinces. But in weighing the importance of structural differences against other economic factors, it can be concluded that the former appears to be less important than the differences in productivity as a cause of the income gap between Quebec and Ontario. In other words, the differential existing in earned income per employed person between Quebec and Ontario would be more attributable to such factors as differences in capital-labour ratio than to differences in the distribution of labour as between capital-intensive and labour-intensive industries.

2. Implications for Economic Policy

Allowing for the fundamental character of the factors contributing to the income disparity between Quebec and Ontario, the task of achieving a better balance appears to be a particularly arduous one, with solutions to be found only over a long period of time. According to the Council, the evidence of growth in income and population over the period 1926-1964 and their survey of the important factors contributing to interregional disparity suggest that:

> Neither the free play of economic forces nor public policy are likely to produce the required adjustments except in an environment of vigorous national growth.(2)

The Council is nevertheless aware that the achievement of sustained national growth, though a prerequisite, will not be sufficient. Recent economic development, i.e. between 1961-1964, indicates(3) clearly that:

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(2) - Economic Council of Canada, Third Annual Review, op.cit., p. 240.

(3) - The period 1961 to 1965, was a period of rapid economic advance at the national level. During this period, one of the important factors contributing to interregional differences in per capita income, i.e., interregional differences in the full and efficient employment of manpower resources, has actually widened. After five years of rapid expansion, Quebec and the Atlantic Region have ended with a relatively greater concentration of overall Canadian unemployment than when the expansion began. Economic Council of Canada, Third Annual Review, op.cit., pp. 245-246.

> . . . it would be hazardous to assume that rapid economic advance at the national level, although providing a favourable environment, would be sufficient in itself to reduce interregional income disparity significantly.(4)

In the light of its analysis of economic development in Canada and of regional disparities, the Council believes that a better regional balance in national growth can only be achieved through new and special efforts deliberately focused upon this compelling objective. Comprehensive and long-run regional growth policies will have to be developed and followed. The key objective of these policies is to increase opportunities for high-productivity employment and bring about a rapid and widespread improvement in the lower income provinces.(5)

At the federal level there has been a degree of acceptance of this responsibility of a better economic balance between the "have" and the "have not" provinces. Through a system of equalization grants the federal government enables the poorer provinces to offer to their citizens social services of a quality comparable to those enjoyed by the residents of the richer provinces. Ottawa has also recognized the need for more positive measures, and special programmes designed to correct regional disparities in income and economic underdevelopment are in operation. By

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(4) - Economic Council of Canada, Second Annual Review, op.cit., p. 105.
(5) - Economic Council of Canada, Third Annual Review, op.cit., p. 263.

the Agricultural and Rural Development Act (ARDA), the Fund for Rural Economic Development (FRED), and the Area Development Agency (ADA) the federal government encourages the economic reorganization of rural areas and induces new industries to locate in areas of high unemployment.

Moreover, a more global approach to regional development is being attempted through the Atlantic Development Board (ADB). Faced with the persisting problems of slow growth and low income in the Atlantic Region compared to the rest of Canada, the federal government created, in 1962, the ADB as a special agency, distant from the regular machinery of government, to concern itself exclusively with the economy of the Maritimes. The Board has been asked to prepare an overall co-ordinated plan for the promotion of economic growth in the Atlantic Region. To help the Maritime Provinces improve their basic infrastructure and to undertake other development projects, a $150,000,000 Atlantic Development Fund was established.

Quebec is the only province, besides the Maritimes, that has lagged in its economic achievement, as measured by average income, behind the Canadian average. It might be possible to develop a formula by which Quebec would receive some sort of financial assistance similar to the assistance provided through ADB.

At the same time, while there is a degree of federal acceptance of responsibility for harmonious overall economic development, the rate of growth to prevail in any of the regions of Canada cannot be regarded as a complete federal responsibility. Because of its size, of its constitutional and fiscal powers, and because of its closer relations with the people, the provincial government is in a unique position to influence the rate of economic development.

The government of the Province of Quebec in cooperation with the federal government will have to accelerate and give priority to investment in human resources and in growth-promoting social capital. Also with the assistance of the federal government, Quebec should continue more strongly its present effort to formulate and implement consistent and realistic regional policies. The Gaspe and Lower St. Lawrence Task Force (BAEQ) should be followed by other similar research programmes aimed at achieving within Quebec itself a more balanced sub-regional economic development as well as a more efficient allocation of the Province's resources.

The government of Quebec should pay special attention to improving industrial productivity and encouraging research focused upon this objective. Greater advantage should be sought from such federal programmes as Program for the Advancement of Industrial Technology (PAIT)

and General Incentive for Research and Development (GIRD) which were specially designed to encourage attempts to improve industrial technology.

It has been argued that to narrow the gap in average income that exists in Canada between the Atlantic Region - this is also true for Quebec - and the Canadian average, measures aimed at increasing productivity can only be partially successful:

> Policies narrowly designed to increase productivity within existing conditions of labour demand and supply, or within conditions of labour demand and supply such as have existed in the Atlantic Provinces for three or four decades or longer, will likely have only a marginal effect on the economy's productivity ... The main effect will likely be to shift persons from the underemployed to the unemployed category of the labour force ... The fundamental solution to both the productivity and human resource utilization problems lies in that policy area which has for its purpose an ever-rising number of new job opportunities...(6)

The Province of Quebec shares with the Atlantic Region the task of creating an increasing number of employment opportunities. This can be achieved through a concerted effort to attract more private investments in the province. This could be realized with an improved programme of financial assistance, of tax concession, of industrial

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(6) - Atlantic Provinces Economic Council, Productivity, the Use of Human Resources and the Income Gap, Fredericton, N.B., Pamphlet No. 11, 1967, p. 32.

parks, etc. As suggested by the Royal Commission on Taxation in its report,(7) Quebec in attempting to attract more investments should concentrate on capital-intensive industries. The latter are high-wage industries and could contribute to bring average earnings in Quebec closer to what they are in Ontario.

Finally without frustrating the legitimate aspirations of a better informed and consulted private sector, the Government of Quebec should use more fully its economic power to accelerate the Province's rate of industrial development. The creation of the Societe Generale de Financement and of the Caisse de Retraite du Quebec, as well as the nationalization of the electric power companies, were a good step in this direction, but more will be needed for the income disparity with Ontario to be significantly narrowed.

3. Direction of Future Research

This analysis revealed that the structural differences that exist between Quebec and Ontario are only of minor significance among those factors contributing to the income gap prevailing between these two provinces. It should not be concluded that the structural factors have little economic growth implications. On the contrary, the role played by other structural factors should be analyzed.

As defined in Chapter 1 (see page 4) the concept

(7) - Report of the Royal Commission on Taxation, op.cit., p. 41.

of economic structure extends to the distribution of investments by industries and is not limited to the industrial structure of the labour force. It would be interesting to establish what have been the economic implications of the variations still existing between the structure of investments of each of these two provinces.

In Chapter III, (see pages 68-104) the changes experienced since 1931 by the economic structure of both Quebec and Ontario were described. The trend between 1931 and 1964 was one of shifts from the primary sectors to the manufacturing and service sectors of the economy. It was not possible in this thesis to establish if the structural changes experienced by Quebec during the period 1931 and 1964 have resulted in a better allocation of resources and in a higher standard of living.

Finally, it was not possible to analyze the intra-industry economic structure of Quebec. Such an analysis could be used to identify which are the industries that would by their growth induce the highest rate of growth of employment and income in Quebec. It should be one of the priority objectives of the provincial government of Quebec to encourage the development of these industries. It is only in achieving a rate of economic growth higher than in Ontario that Quebec can hope to narrow the income gap that has existed for many years with Ontario.

APPENDIX A

In some of the statistical tables presented in this analysis, personal estimates had to be used to supplement the published material. The purpose of this APPENDIX A is to explain the technique and assumptions that were used to arrive at these estimates.

Table 4

The "farm population" refers to the population living on farms in localities classed as rural. Thus the definition of farm population is dependent on both the definition used to define "farm" as well as that to define "rural". In the 1956 and 1951 Censuses, a farm was defined as a holding on which agricultural operations were carried out and which was (a) 3 acres or more in size; or (b) 1 to 3 acres in size with agricultural production during the previous year valued at $250 or more.

In the 1951 Census the whole metropolitan area with its built-up areas, and any community of 1,000 persons or more whether or not incorporated as a city or town or village was classed as urban. Places of less than 1,000 population whether or not incorporated were excluded from the urban population in 1951. In 1956, were included in the definition of urban population, not only the built-up areas of the metropolitan areas, but also the built-up areas of additional "major" urban centres.

Table 4 presents data on the basis of the 1951 definition of "urban" and "farm". The 1961 data are adjusted

data that were previously based on the 1956 definition of "urban" and "farm". The 1951 data were available on both bases and they served as adjustment factor. See: 1961 Census of Canada, Bulletin 7-1-2, pp. 2-21, 2-22.

Table 5

The 1931-1961 data on the labour force and population of age 15 and over come from the 1961 Census of Canada Bulletin SL-1.

The 1964 issue of the DBS' Vital Statistics gives the 1964 data for population by sex ang age. There is no breakdown showing population age 15 and over but there is one for the group 14 years of age and over. It was assumed that between 1961 and 1964 the population of 0 to 15 years of age increased at the same rate as the population of 0 to 14 years of age. Moreover it was assumed that the 1964 distribution by sex for the age-group 15 years and over was identical to the sex distribution of the group 14 years of age and over.

The 1964 issue of The Labour Force gives data on the labour force 14 years of age and over, by sex and by province. To obtain the 1964 labour force value on the basis "15 years of age and over", it was assumed that labour force on the latter basis has increased between 1961 and 1964 at the same rate as labour force 14 years of age and over.

APPENDIX A

Tables 8 and 9

To deflate the mining and manufacturing value added for Quebec and Ontario, it was assumed that price changes experienced by these two industries have been uniform across Canada. Since the Wholesale Price Index is published on a national basis only, it is not possible to verify this assumption. But, as it will be explained for Table 11, there has been little variation as between provinces in the movements of consumers prices. It is likely that variations in the wholesale prices have been even more uniform across the country than it was the case for consumer prices. The wholesale market is usually a more competitive market than the retail market. Moreover, Quebec and Ontario being so close geographically to each other, free movements of goods between them can be expected to have maintained differences in the rate of change of wholesale prices at a very low level.

Table 10

The 1964 data for net value of production by commodity-producing industries were obtained from Miss A. McArthur of the Dominion Bureau of Statistics. The 1961 and 1964 data for electric power, mining, and manufacturing were adjusted for changes in the standard industrial classification. The overlapping years 1956 (for electric power), 1959 (for mining) and 1959 and 1961 (for manufacturing) were used to establish the adjustment factor.

APPENDIX A

Table 11

The Canada indexes of real domestic product by industry of origin were used to correct for price changes the current dollars net value of production for the period 1935-1964. To deflate the 1931 data, it was assumed that the indices for each industry have changed in the same proportion as those developed by W. C. Hood, and A. Scott (op.cit.).

The quantity indexes were applied to the Canada 1949 current dollars value of production for each industry. The values obtained are the $P_o Q_1$'s required to develop the implicit price index for each industry. The latter is equal to $\frac{P^1 Q^1}{P_o Q_1}$.

The implicit index derived is a Canada index. To use the latter to deflate Quebec's and Ontario's current dollars value of production, it had to be assumed that prices have changed at the same rate since 1931 in Canada, Quebec, and Ontario.

The only regional price index available is the consumer price index. The latter is published for 11 major metropolitan areas across Canada. The following table compares the movements in consumer prices since 1941 in Canada, Montreal, Ottawa, and Toronto.

APPENDIX A

Table A

Consumer Price Indexes

1949 = 100

	Canada	Montreal	Ottawa	Toronto
1941 =	69.6	68.6	68.7	69.9
1951 =	113.7	116.1	115.3	115.4
1961 =	129.2	129.3	130.2	131.2
1964 =	135.4	135.1	136.0	136.9
Percent Change				
1941-51	63.4	69.2	67.8	65.1
1951-64	19.1	16.4	17.9	18.6
1941-64	94.5	96.9	97.9	95.8

Source: Dominion Bureau of Statistics, Prices and Price Indexes, Queen's Printer, Ottawa, 1952, 1966.

APPENDIX A

The index numbers of farm prices of agricultural products are also available by provinces.

Table B

Index of Farm Prices of Agricultural Products

(1935-39 = 100)

	Canada	Quebec	Ontario
1935	88.0	90.1	93.2
1941	110.2	127.4	120.2
1951	296.8	305.6	315.0
1961	261.2	274.3	265.3
1964	265.8	280.5	269.5
Percent Change			
1935-51	237.3	239.2	238.0
1951-64	-10.4	- 8.3	-14.4
1935-64	202.0	211.3	189.2

Source: Dominion Bureau of Statistics, Index Numbers of Farm Prices of Agricultural Products, Queen's Printer, Ottawa, 1956, 1967.

APPENDIX A

Tables A and B indicate that there has been little variation as between each region's price inflation experience. S. E. Chernick in the analysis of Interregional Disparities in Income, (Economic Council of Canada, Ottawa, 1966, p. 47) establishes that between 1940 and 1963, consumer prices have changed at the average annual rate of 4.5 and 4.4 percent in Quebec and Ontario respectively.

It would seem therefore that the assumption of similar price changes in Quebec, Ontario and Canada is acceptable and that reliance on this does not invalidate the analysis.

Table 14

Quebec's Bureau of Economic Research estimates the value of total production using the income approach. Their estimates are conceptually comparable to DBS's GNP for Canada. The 1931, 1941, and 1951 value of total output in Quebec was established on the basis of the compared past relationship between GNP and personal income in Canada and in Quebec.

The Canada implicit price indexes of the GNE were used to deflate the current values of output of both Quebec and Canada. This implies that the assumption of similar price changes in Canada and in Quebec had to be made. For a justification of this technique see the comments made above in relation to Table 11.

APPENDIX A

Table 16

The constant dollars value of personal income for both Quebec and Ontario were obtained by deflating the current dollars value by the Canada implicit indexes of the GNE.

Table 19

The 1941-61 Census data on labour force by comparable major industry groups (1961 Census of Canada, Bulletin SL-1, Table 12) have been collected on the basis of an industrial classification which differed from the classification used for the collection of the 1931-1951 data (1951 Census of Canada, Bulletin SP-8, tables 7 and 8). The 1941 data are published on both basis, and therefore they were used to make the 1931 data (based on the 1951 industrial classification) comparable to the 1941, 1951, 1961 data.

Tables 20 and 21

The constant dollars value of labour income by industry for Quebec and Canada were obtained by deflating the current dollars value by implicit price indexes that were established on the basis of the Canada indexes of real domestic product by industry of origin. See the comments made above in relation to Table 22.

APPENDIX B

Table 26 summarizes the effects of differences between the industrial structure of labour force in Quebec and in Ontario. The comparison was obtained by the application of the standardization technique to the 1931 and 1961 Census data on wage earners.

The term standardization refers to the application of a uniform set of weights to a statistical group (such as earnings by industry) of a different region in order to remove that part of interregional differences which results merely from differences in population and/or labour force characteristics. The standardized and unstandarized average can then be compared, and the economic implications of the interregional differences in the economic structure can be identified.

For example, let us suppose that there are only two industries, industry A and industry B. Let us assume that there are Eaq employees in the industry A of Quebec, and Eao employees in the same industry in Ontario. In the industry B, there are Ebq and Ebo employees in Quebec and Ontario respectively. Average earnings per person in the industry A are Waq and Wao in Quebec and Ontario respectively, while in industry B they are Wbq and Wbo.

It can be calculated that in Quebec the weighted average earnings per employee are:

APPENDIX B

$$\frac{(Eaq \cdot Waq) + (Ebq \cdot Wbq)}{Eaq + Ebq} = Uq$$

In Ontario the corresponding unstandardized average value is:

$$\frac{(Eao \cdot Wao) + (Ebo \cdot Wbo)}{Eao + Ebo} = Uo$$

If, Quebec's total employment was distributed between A and B as Ontario's is, average earnings in Quebec would be:

$$\frac{(Eao \cdot Waq) + (Ebo \cdot Wbq)}{Eao + Ebo} = Sq$$

The difference Sq - Uq corresponds to this part of the income gap between Ontario and Quebec, i.e., Uo - Uq, which is explainable by the differences existing between the industrial structure of Quebec and of Ontario.

This technique was used by E. F. Denison (The Sources of Economic Growth in the United States and the Alternatives Before Us, Committee for Economic Development, New York, 1962) to explain the inter-state income differentials existing in the United States. F. T. Denton (op.cit.) used the same technique to explain the Canadian irregional differences in earnings.

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