FACTORS DETERMINING REGIONAL ECONOMIC GROWTH
- A CASE STUDY: THE ST.MAURICE REGION

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CHAPTER I

INTRODUCTION

Objectives of the Thesis.

This thesis is concerned with the study of the process of economic development of the St.Maurice region[1] in the province of Québec.

The general objectives of the analysis are: to examine some theories of economic growth in view of their possible use in explaining the development of the St.Maurice region, to obtain through statistical analysis a better understanding of the process of economic growth in the region, and, to set the economic development of the St.Maurice region in a historical perspective with particular emphasis on the first sixty years of the present century.

The main areas of discussion are: 1) factors determining economic growth of regions in general, 2) factors which are relevant in explaining the development of the St.Maurice region, 3) economic structure and pattern of growth for the period 1901-1961, 4) reasons for, and implications of different rates of economic growth noted at different sub-periods and in each individual county with particular reference to a period of stagnation that can be observed since the early ...

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1 Commonly called "La Mauricie".

fifties, and, 5) possible alternatives for public and private action to stimulate growth of the region in the future.

Reasons for Choosing the St.Maurice Region.

The region has special characteristics including conflicting trends of both expansion and contraction of specific sectors. It developed rapidly around one or two export bases and soon became one of the leading industrialized regions of the province. Agriculture never quite developed except in certain areas, in particular, the lowlands lying on each side of the St.Lawrence river.

World War I and II had a beneficial impact on speeding up the industrial development of the St.Maurice region but changing technology and the relative decline in the importance of existing location factors contributed to the slow-down in economic activity that can be observed during the last decade under examination.

Outline.

Chapter II examines three theories which explain the process of regional economic growth: the staples theory, the location theory and the "pôles de croissance" theory. These theories are tested against actual experience to see whether they assist in explaining the economic development of the St. Maurice region.

Chapter III considers the population characteristics of the region including concentration and redistribution, urban and rural distribution, age groups and educational levels.

Labour force characteristics are analysed as are employment shifts between various industrial sectors with particular emphasis on the manufacturing sector.

Chapter IV is concerned with the measurement of levels and changes in levels of incomes in the region. Taxation and Census data are examined, both on a county and urban basis.

Chapter V provides a summary of the growth sequence of industries in the region, with special emphasis given to the manufacturing industries which were both the base and the motor of the rapid development that took place since the beginning of the present century.

Chapter VI sets the economic development of the St.Maurice region in a historical perspective with particular emphasis on explaining the relative impact of exogenous and endogenous factors discussed in chapters III and IV inclusively.

Chapter VII summarizes the problems of the region and presents various alternatives facing the public and private authorities concerned with the economic development of the area.

In short this thesis attempts to trace the evolution of various growth factors in the St.Maurice region since 1901.

This thesis analyzes the behavior of a number of economic variables in the development process. It is not an explicit evaluation of regional development policies. However, some general suggestions as to how the present stagnation could be dealt with may help to round out the assessment presented.

CHAPTER II

REGIONAL ECONOMIC GROWTH THEORIES.

Regional economics deals with the study of the problems of regions from an economic viewpoint. The core of a discipline is characterized by its subject matter. Regional science is concerned with phenomena that occur in regions. The term region usually refers to a subnational economy; that is, a significant portion of a national unit such as a geographical unit, an industrial area, a political delimitation. A region can be considered with reference to its economic situation, i.e. depressed or progressive; it can also be seen as a resources or as a market area.[1]

In other words, the region is an intellectual construct designed to simplify analysis and it involves the selection of suitable criteria for the recognition of regional homogeneities whatever they are in the researcher's mind. Therefore, any limitation of economic areas will be arbitrary and will not necessarily depict a true economic region that would be applicable in all circumstances.[2]

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1 See Chapter III for a delimitation of the St.Maurice region.

2 Nourse, H.O., Regional Economics, McGraw-Hill, Toronto, 1968, p.129.

Economic growth can be examined both quantitatively and qualitatively. More than the measurement of a nation's output, growth economics is concerned with the analysis of structural readjustments that are taking place because of both those qualitative and quantitative changes. These changes include shifts of population and of income distribution, labour force composition, industrial structure and of government policies.

The task of analysing structural changes can be made easier or more manageable by studying individual regions or industrial sectors that can be examined in terms of their changing resource endowment, labour force, industrial structure and income level.

Regional economic studies are more feasible in size and scope, and yet throw considerable light upon the processes and problems of national economic development.

Among the various theories of regional economic growth that have been advanced, three approaches are examined in this chapter, the location theory, the "pôle the croissance" theory and the staple theory.

A The Location Theory

a) General

The location theory is largely concerned with causes and effects of geographic mobility or immobility of

individuals and industries upon the economy of a region.

The general objective of a theory of location has been to bring the separate location theories into one general doctrine and fuse the latter with existing production, price and trade theory.[1]

The theories that will be considered here have been developed by Weber, Hoover and Lösch.[2] They all rest upon the principle of substitution, i.e. the extent to which labour can be substituted for capital is basically the same problem as the selection of a plant site from among alternative locations. The location of a plant is generally related to the cost advantages at such a site, or to the locational interdependence of firms, i.e. the size and shape of the market area.

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1 Isard, W., Location and Space Economy, The M.I.T. Press, Cambridge, 1956, p.23.

2 Lösch, A., The Economics of Location, John Wiley & Sons Inc., New-York, 1952.

Hoover, E.M., The Location of Economic Activity, McGraw Hill, New-York, 1948.

Weber, A., Theory of the Location of Industries, University of Chicago Press, Chicago, 1928.

The study of location patterns can be viewed as a transport oriented analysis, a labour oriented analysis, or as a market or supply area analysis, In his classic work on location theory, Alfred Weber[1] emphasizes three basic location forces: transportation cost differentials, labour cost differentials and "agglomerating" advantages.[2]

Transport and labor cost differentials interplay to determine the distribution of industries and the agglomeration factor acts to concentrate or disperse industries within any given region. These phenomena are discussed later in this section.

If cost of transfer were the only significant factor, the site with the lowest transportation cost would be selected. Whether this site is at the point of consumption, at the source of raw materials or fuel, or at a place somewhere between the source and market depends upon the characteristics of the product. Those materials which lose weight in their conversion into a finished product pull the plant to their deposits. A weight-gaining process favors a location nearer the market. When more than one raw material is used, an intermediate location may be the point of least transfer

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1 Weber, A., Op. Cit., part I.

2 Proximity to auxiliary industries, better marketing outlets, or economies of size, adequate public facilities etc..

cost.[1] In Weber's terminology, the orientation depends upon the material index.[2]

Transportation cost alone is not the only decisive factor. The availability, skills and cost of labour also exert a locational pull. Whenever the savings in labour costs are larger than the additional transportation costs, industries will tend to move from points of least transfer costs to sites of greater transportation costs.[3] The decentralizing tendencies of these two factors are counteracted or intensified by the third factor; the agglomerating or deglomerating forces.[4]

Savings due to proximity to auxiliary industries, better marketing outlets, economies of size are examples of agglomerating forces. High rents, which tend to disperse the industries is a deglomerating factor. These agglomerating advantages or disadvantages are the governing factors in location decisions whenever transportation and labour costs differentials are relatively small.

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1 Greenhut, M.L., Plant Location in Theory and in Practice, The University of North Carolina Press, Chapel Hill, 1956, p.9.

2 Ratio of the weight of the localized material to the weight of the final product. A material index greater than 1 indicates material orientation and an index smaller than 1 a market orientation.

3 Weber, A., Op. Cit., pp.60 and 61.

4 There are extreme cases where a factor of production cannot be transported e.g. electricity at the beginning of the century.

The theories of Hoover, Von Thünen and Weber, although different in some regards[1], have one main point in common : they all assume that firms are operating in an environment of pure and perfect competition.

Lösch[2] departs from the former with his assumption of different demand functions facing sellers in different areas as a result of different transport costs. Buyers, under these circumstances, are conceived as scattered over an area and each seller becomes a monopolist with respect to consumers who are located near his plant. In the latter case, the least cost location becomes not merely the site at which the firm sells greater quantities at a given market price and achieves greater gains per unit sale, but it is the location which enables the firm to undersell (because of lower costs) its rivals at several consuming points and thereby to place a wider market area under its control.

It is from this monopolistic point of view that the theory of location was further developed by authors such as Smithies, Lerner and Singer.[3]

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1 As to the inclusion of institutional factors like tax system, political boundaries, etc...

2 Lösch, A., Op. Cit., pp. 19 ff.

3 Smithies, A.F., "Optimum Location in Spatial Competition", Journal of Political Economy, XLIX, 1941, pp. 423-439. Lerner, A.P., Singer, H.W., "Some notes on Duopoly and Spatial Competition", Journal of Political Economy, XLV, 1939, pp. 145-186.

Briefly, the first approach which is largely of German origin, emphasizes the least cost site as the most important criterion in consideration of plant location. It assumes different costs among locations and a given buying center. In conformance with its purely competitive framework, an unlimited demand for the output of any firm exists at the prevailing price, and all sellers have access to the buying center[1]. The second approach is an outgrowth of monopolistic competition analysis. In this theory, buyers are conceived to be scattered over an area rather than confined to a given consuming point. The cost of procuring and processing raw materials is assumed to be the same everywhere, and each seller charges an identical net-mill price, leaving delivered price to vary with the distance between consumers and suppliers. Sellers, by dispersing, thus gain control over buyers situated near their plants.

Nevertheless, both approaches emphasize the search for the site which offers the greatest spread between total costs and total revenues.

b) Location factors.

Most theories implicitely assume that once locations are determined, and the plants established, the associated

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1 Dechesnes, L., La Localisation des Diverses Productions, Les Laitions Comptables, Commerciales et Financières, Bruxelles, 1945, p. 11.

flows of commodities, both as inputs and products, are likewise determined. This is accomplished by the assumption of existing trade channels between "locations":

> "Location cannot be explained without at the same time accounting for trade...; and trade cannot be explained without the simultaneous determination of locations."[1]

A location theory must look into factors that affect the formation of markets, cities or industrial centers and in what way they do so. The emphasis is placed in the study of the immediate causes and factors influencing the implantation of various types of industries in different regions. For instance, as an area industrializes, at what point does it abandon the phase of isolation and commence trading with the outside world?[2] Which sites develop as major ports? In what commodities will the area trade? What are the problems of relocation as industrialization proceeds?[3]

One can imagine an area isolated from other areas because of physical distance. For various reasons, one or several individuals or family units begin some occupation in this area. The selection of a site for habitation and cultivation depends on several factors, including existing vegetation, climate, transportation facilities, availability of resources, topography, and techniques in use. The main

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1 Isard, W., Op. Cit., p.207.

2 This reasoning does not apply to the development of the St.Maurice region. See page 34 for further comments.

3 Isard, W., Op. Cit., p.10.

preoccupation of such a population is to survive or to adjust to the more or less rugged environment. This is not the subject matter of economic analysis. Historically, agriculture has been the original occupation of the first cluster of population and the production was then devoted entirely for internal consumption. Gradually, handicrafts and, later, manufacturing industries developed to take advantage of the specialization of factors of production and of the economies of scale peculiar to mass production. But no economies of scale would have been possible without improvement of transportation facilities which permitted various areas to exchange their products:

> "Interareal exchange and specialization becomes more pronounced as the resistance of intervening distance (or cost of transport) declines." [1]

In this regard, the major factors affecting location decisions are discussed in greater detail below.

(a) Transportation.

Transportation is regarded as a vital determinant of plant location. It has generally been thought of as having a dispersing influence on industry, particularly when freight cost is high relative to total cost and the industry serves an extensive market area.

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1 Isard, W., Op. Cit., p.5

This factor is particularly forceful when several products coming from different places are assembled into final goods at one location.

Raw-material oriented industries are generally thought of as following a common pattern: a) the raw material loses weight in its conversion into a finished product and, b) the transportation rate on raw material is equal to, or greater than, the rate on the final product.

Location at or near the market indicates maximum gains when a) the final product is more expensive to transport than the raw material, b) the finished good is perishable, c) the consumer demand is capricious and volatile[1], and, d) close contact with the consumer enhances sales.

Briefly, early stages of production are material oriented and late stages of production are market oriented.[2]

(b) Processing costs.

In those lines of business where transport cost varies little between alternative sites, production cost becomes more

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1 This type of demand suggest location proximate to buyers as a method of holding losses on inventories to a minimum.

2 Greenhut, M.L., Op. Cit., pp.113 and 119.

influential in plant location decisions.

Processing costs are mainly affected by economies of agglomeration. For example, insurance rates, police and fire protection, availability of capital, power and fuel are generally more favourable in populous localities.

Labour considerations can also act to decentralize industry toward areas peripheral to main markets where management has access to cheaper manpower and where labour disturbances are minimized. Also, the internal economies resulting from large-scale operations may not sufficiently compensate for the higher transport costs incurred in servicing distant markets.

The availability of capital is rarely a governing locating force in the decisions of the large companies. It can be of importance in the case of smaller companies, but the latter usually choose a location for other reasons.[1]

(c) Causes of Locational Changes.

The basic causes of locational changes may be classified as seasonal, cyclical, secular and structural according to their character and duration.

Seasonal changes are temporary shifts of location to meet weather or working conditions. The passing of the

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1 The proprietor lives in the region, knows people and frequently has family ties there.

seasons and their effects on locational preference are generally known in advance and the location problems caused thereby are generally of minor importance.

Cyclical changes last longer than the previous ones. It is generally claimed that they are likely to affect most activities of a given region in the same direction at about the same time whereas there is considerable diversity in seasonal patterns.[1] Cyclical changes are usually associated with fluctuations in the rate of investment and the accompanying effects on total demand for the factors of production and for new goods, especially durable goods.

Secular changes or trends are gradual alterations which persist for long periods and show no tendency to repeat themselves as cycles and the seasons do. The depletion of an exhaustible resource, for example, follows such a trend.[2] Only a sudden structural change, the development of a new resource or of a new technique can divert the direction of these trends. The causes that produce permanent structural changes, that is, technological progress[3], population grow

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1 Burns, A.F., Mitchell, W.C., Measuring Business Cycles, National Bureau of Economic Research, New-York, 1946, ch.

2 Hoover, E.M., Op. Cit., p.146.

3 Technological progress may affect locational patterns through changes in transfer costs, labour and materials requirements and energy costs.

and the discovery and depletion of resources are of greatest importance when it comes to explaining the direction, distribution or concentration of industries and population in a certain area.

Finally, the locational significance of boundaries must not be overlooked. Any political boundary may be a barrier to the migration of labour, capital and industry. However, if a political boundary reduces factor mobility, this is likely to accentuate differences in the relative availability of factors of production and thus to increase the economic incentives to trade. Such trade serves as a partial substitute for migration of factors and conversely, any barriers to trade increase the incentive for factor migration.[1] International trade theory thus appears as a special case of the location theory, that is, in the case where barriers have been erected. Walter Isard, who has developed much of modern regional economics, spent a great deal of time on the problem of integrating or synthesizing location theory with international trade theory.[2]

However, the theory has reached the point where it could benefit from some diversion of effort away from the mere out line of some of the main factors affecting spatial economic

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1 Hoover, E.M., Op. Cit., p.236.

2 Isard, W., Peck, M.J., "Location Theory and International and Interregional Trade", Quarterly Journal of Economics, February 1954, pp.97-114.

activity. This is discussed in section D.

B "Pôles de Croissance" Theory

In recent years, French theory and practice of economic planning has attracted considerable attention. In the light of French success with reconstruction and development, this attention is not difficult to understand. In areas where French culture, language and literature are prevalent (as in the province of Quebec), French ideas regarding planning exert considerable influence. Two main concepts emerge from the French "school", the "pôles de croissance"[1] and the "zone pilote" concepts.

The more important one, on which there is a substantial literature, is the "pôles de croissance" concept. It originated with Professor Francois Perroux and was further elaborated by other French economists notably Jacques R. Boudeville and Jean Paelinck.[2]

The basic idea is that economic development never takes place at a uniform rate throughout an economy but tends to concentrate on a limited number of "focal points" from

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1 Growth pole or focal point of growth.

2 Boudeville, J.R., L'espace et les pôles de croissance, Presses Universitaires de France, Paris, 1968.
Paelinck, J., "Développement régional polarisé", in Cahiers de l'institut des sciences économiques appliquées, Série L, No. 15, 1959.
Perroux, F., "Note sur la notion de pôle de croissance", in Economie Appliquée, Jan-juin, 1955.

which "spread effects" are generated to the rest of the economy.

Francois Perroux has defined "Pôles de Croissance" as follows:

> "Le fait grossier mais solide, est celui-ci: la croissance n'apparait pas partout à la fois; elle se manifeste en des points ou pôles de croissance, avec des intensités variables; elle se répand par divers canaux et avec des effets terminaux variables pour l'ensemble de l'économie."[1]

The problem of development is then analysed essentially from the study and delimitation of these "pôles", and the region so identified can be defined as the "région polarisée". According to the theory, the birth of the "pôles" depends on the spirit of innovation. This idea can be best developed from the notion of "industrie motrice".[2]

The "pôle de croissance" in Perroux's thinking is associated with his concept of "domination" of a national, regional or local economy over others. Similarly, a particular industrial city may dominate a region and at the same time generate growth in the region as a whole. The interactions can be expressed in the form of an interindustry matrix with both "upstream" and "downstream" effects,[3] emanating from the

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1 Perroux, F., Op. Cit., p. 309.

2 Industrie-clé or the one that permits and favors the activity of other industries as suppliers or/and consumers.

3 Backward and forward linkage effects in Hirschman's terms.

collection of key industries, located spatially at the "poles de croissance". Growth is then inherently unbalanced or disequilibrating and here, Perroux and his colleagues anticipated some of Hirschman's ideas:

> "Deliberate unbalancing of the economy in accordance with a predesigned strategy is the best way to achieve economic growth."[1]

Consider a model where a particular firm has speeding-up and slowing-down effects on the other firms in one specific region. The region is isolated and closed in the economic sense. The firm is specified in regards to a particular flow of supply and demand for certain commodities, by comparison to the total flow of all goods and services produced in the economic space considered. The dominant firm sells more than all the others together, and also has a larger payroll and more investment channels. (Situations of total or partial monopoly are excluded).

In the process of development and growth, the dominant firm exerts its influence in two ways; by anticipation and by innovation. By anticipation, it has an impact because of the influence on the growth of the region or economic space resulting from the success or failure in the prediction of the changes in the aggregate demand by the firm. By innovation, from changes in the coefficients of production.[2]

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1 Hirschman, A.O., The Strategy of Economic Development, Yale University Press, New Haven, 1963, Ch. 6.

2 Boudeville, J.R., Op. Cit., p. 65.

If, for example, a firm makes an incorrect anticipation of future aggregate demand (in this case, anticipation of a drop of aggregate demand). Under these circumstances, it would reduce its production, the volume of purchase of input and the size of its labour force.

Since it is a relatively important economic unit in the area, even a small decrease in the volume of its labour force will create a relatively large decrease in employment and, therefore, in aggregate wages. Total volume of investment, being a function of the anticipated consumption expenditures, would drop. The dominant firm can thus create unemployment, which is the result of a sharp reduction of the volume of investments, in the "region" by some fallacious anticipation of future total aggregate demand.

Also, since the rate of production is less than before, the firm will have less output for the market. The decrease in supply will push up prices and this, in turn, will increase the costs of customer-firms. Some marginal firms will fail and others will suffer a reduction in their profit margins resulting in additional unemployment.

By innovation, the dominant firm can vary its production function to adapt fairly rapidly to new conditions. In this case, the firm is considered as the cause of economic progress i.e. it anticipates correctly any variation in the aggregate demand. If perfect competition prevails, the

dominant firm will tend to sell at a lower price than others in the same field. This, in turn, will make it possible for customer-firms to lower their own prices and to be competitive in their respective markets.

The dominant firm can thus be the originator of new situations, either in the direction of increasing or decreasing costs.

In the long-run, given a rate of increase in aggregate demand and supply, the dominant firm will foster new activities complementary to its own and to the other activities in the region. This trend is characterized by an increase in the volume of gross investment by the dominant firm which brings "effets remontants et descendants".[1] The "effets remontants" are, for example, the increase in purchases of goods and services by the dominant firm resulting from the increase in its production. The dominant firm will also create "effets descendants" if it can supply the increasing demand from the "other firms" at a lower cost. This raises the real income of the latter (and their profits) and, in turn, creates a greater possibility of new activities being established in the region.

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1 Forward and backward linkage effects in Hirschman's terminology.

The notion of pole can be extended to apply to a specific region or area. Development would thus be generated by certain dynamic cities having a relatively strong influence on other agglomerations of a smaller importance.[1] Relations of domination and dependence are established between a pole and its hinterland. Theoretically, the polarized spaces do not have a unique and continued geographic border although, in practice, the zones of influence generally surround the development poles.

The domination of a pole in its zone of influence is tied to a continued capacity to innovate. Its dynamism draws human, financial and administrative resources at the expense of less efficient or less attractive regions. The ideal situation occurs when competition exists between polarized spaces in such a way as to stimulate innovation.

The only way an area can aim to be a development pole is to free itself from its satellite position and become competitive enough to go on its own. Examples of this are New-York becoming economically independent from London, and Toronto from Montréal.[2]

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1 In Canada the growth pole may be a complex of natural resources that creates a nexus of development as in the case of the St.Maurice region.

2 Higgins, B., Raynauld, A., Martin, F., Les orientations du développement économique régional dans la province de Québec, Ministère de l'expansion économique régional, Ottawa, 1970, p.115.

C The Staple Theory

The export or staple-commodity approach is frequently used to explain the occupation and settlement of an undeveloped region. The mere question "How did this unsettled region begin to grow" is bound to be answered by a description of the staple.

Contrary to the explanation given by the proponents of the location theory, as seen above, the staples approach does not rely on regional savings or natural increase of population to explain growth. It relies on migration. It is assumed that population growth continues in other countries and that savings and investible funds will be mainly generated outside the region. Factors are attracted by the high returns offered by a staple export. This assumption, essential for explaining the initial occupation of vacant lands, continues in modified form after the region has become developed.[1] In other words, the theory must explain how the region holds people and capital after the first phase of development is over.

The staple approach to the study of economic history and development is primarily a Canadian innovation. The leading exponent was the late Harold Innis in his pioneering historical studies, notably of the cod fisheries and the fur

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1 There are other cases where people seeking new homes are occupying land even in the absence of a staple that offers an opportunity to make a profit.

trade.

Canadian export staples have been commodities whose production involved the use of abundant natural resources that could be exploited with the available technology and capital for external markets. Moreover, the staple would also have to be easily transported so that the cost of transportation is covered by returns from sales. Finally, it would be sufficiently durable to last until it reaches the market, which may take a long time. Characteristically, it has a dominant role in the economy. In short, a staple is a commodity which a country can produce and export effectively and on which it is dependent.

In the earlier work of Innis, the concept of staple was usually used to describe a product of an extractive industry. The modern definition of an export commodity may include products of secondary or tertiary industry as well. It would be more appropriate to call it an exportable

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1 Innis, H., Problems of Staples Production in Canada, University of Toronto Press, Toronto, 1933; and The Fur Trade in Canada - An Introduction to Canadian Economic History, University of Toronto Press, Toronto, 1940.

commodity (or service) or merely the chief commodity or service produced by a region In this thesis, the latter definition of staple has been adopted.

According to the staple export theory, colonies did not seek to develop the whole range of resources available to them. They rather produced and exported "staples" in order to be able to pay for the needed imports.

In doing so, the colonies have ordinarily attained a higher standard of living more quickly than they would have been able to, had they pursued a programme of self-sufficiency.[1]

While land and other natural resources were in abundance during Canada's early years, both labour and capital were relatively scarce resources. As a consequence of the high premium placed on the latter two factors, they tended to flow in at an unprecedented rate. In such a situation, any country will find that its comparative advantage lies in the production of commodities which make heavy demands upon the land and natural resources and relatively smaller demands upon labour and capital.

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1 In general, when a pioneer community tries to live by itself, the lack of a large population limits the extent of specialization and the amount of skill that can be used reduces the output of industry. These factors, along with the lack of machinery, transportation facilities and other capital equipment, prevent the standard of living from rising.

If the country is small in terms of total population and output, it will be highly dependent of international trade. It will tend to export the land intensive products in which it has a comparative advantage. That comparative advantage may change. New resources may be discovered, new technology developed at home and abroad and new markets opened up or old runs closed. Other countries may introduce controls over commodity trade, emigration and capital exports, which may affect the developing economy.

The population may grow, allowing for more diversification and for more manufacturing industries to reach competitive size. In such a situation, economic development is insecure because it depends on development in foreign markets and on technology which no one can foresee and which may require major adjustments in the economic and social structure.[1]

In specializing in internationally tradeable products, the country raises its standard of living, but this is achieved only at some cost in security and stability. According to Innis, Canadian economic development took the form of a series of discontinuous waves or jumps, each of which centred around the production of some particular staple product for sale in world markets. Each wave involved massive investment

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1 Drummond, I., The Canadian Economy, Richard Irwin Inc., Homewood, Ill., 1966, p.123.

largely in the production and transportation of those products.

Until the early XIXth Century, the staples were fur and codfish. In the 1830's and 1840's, the staple was square timber, at least in the St.Lawrence Valley. From the 1850's to the 1890's, there was no new dominant staple to give an impulse to expansion. From 1896 to 1914, a new staple boom was based on wheat. In the 1920's, and again in the late forties and early fifties, growth was led by forest products, nonferrous metal and oil and gas in the western provinces.

Between those waves, the economy has undergone painful periods of readjustment. Labour and capital were withdrawn from old staples and moved to new ones; immigration tended to vary with economic activity and so did emigration in an inverse relation. The general trend though, has been a continuous growth in population and in export industries. Much of Canada's agricultural production has been oriented towards markets at home and abroad. An exception to this is the Eastern part of Canada in the XIXth Century where there was still a great spread of subsistence farming. Urbanization came relatively rapidly. The physical expansion of cities created many of the jobs needed to support the growing population. Large cities gradually became a more appropriate place to locate for manufacturing industries because of the increasing size of local markets for the commodities produced

and the presence of specialized labour force. Indeed, urbanization has been important in the growth of construction and manufacturing industries. In addition, many Canadian manufacturers have been allowed to develop behind the natural protection of transportation costs. By raising local incomes, the staples industries helped to create a local market for these somewhat sheltered manufactures.

The pattern sketched above is an oversimplification of what happened in the course of Canadian economic development. The latter is not wholly traceable to the growth of the staples industries but Canadians should keep in mind that they have become an industrialized nation partly because they have at some time in their history, been hewers of wood and drawers of water for other countries.[1]

In summary, new countries had two distinctive characteristics as they began their economic growth: a favourable man/land ratio and an absence of inhibiting traditions.[2]

The fundamental assumption is that staple exports are the leading sector of the economy, and they set the pace for economic growth in other sectors as well. The limited and, initially, almost non-existent domestic market, and the

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1 Drummond, I., Op. Cit., pp. 124 and 125.

2 What Rostow calls: "the absence of structures, politics and values of the traditional society of the born free nations". -The Stages of Economic Growth, pp. 17 ff.

factor proportions i.e. abundance of land relative to labour and capital, create a comparative advantage in resource-intensive exports or staples.

In those conditions, economic development will be a process of expansion with perhaps some diversification around an export base. The central concept is therefore the spread or linkage effects of the export sector.[1] To be able to construct a staple theory, it is then necessary to clarify these spread effects and indicate their determinants.

Backward linkage is a measure of the inducement to invest in the home production of inputs including capital goods for the expansion of the export sector. An example is the building of transportation systems for the collection of the staples. Forward linkage is a measure of the inducement to invest in industries using the output of the export industries as an input. The economic possibilities of further processing and the nature of foreign tariffs are the prime determinants in this case. Finally, demand linkage is a measure of the inducement to invest in domestic industries producing consumers' goods for the population drawing its income from the export sector. Here, the prime determinant is the size of the domestic market, which is in turn, dependent

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1 Watkins, M.H., "A Staple Theory of Economic Growth", Canadian Journal of Economics and Political Science, May 1963, p.143.

on the level of income and its distribution among workers.

Investment is not only induced by demand factors but also by supply factors i.e. domestic and foreign entrepreneurship, [1] availability of domestic and foreign capital, evolution and application of technology and the international environment.

As mentioned earlier, the probability of long-run success for the staple economy is significantly increased by its two distinctive initial features i.e. a favourable man/land ratio and an absence of inhibiting traditions. The first implies a relatively high standard of living which facilitates the expansion of domestic markets and factor mobility. The second feature means that the institutions and values must be formed anew or transformed to a great extent so as to take an attitude more favourable to economic growth.[2]

Some economists suggest that the achievement of a high level of national income masks deficiencies in the structural balance of the economy. W.W. Rostow[3] charges that the high levels of welfare achieved in new countries by exploiting land and natural resources will delay their reaching the

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1 Ability to perceive and exploit market opportunities.

2 Watkins, M.H., Op. Cit., p. 149.

3 Rostow, W.W., The Stages of Economic Growth, Cambridge University Press, London, 1960, p. 36.

"take-off" stage.[1] Another possible difficulty is that people exercising political control will develop an "inhibiting" export mentality resulting in an overconcentration of resources in the export sector and a reluctance to promote domestic development i.e. the "staple trap".[2]

If these pitfalls are avoided; if the staple (s) generate (s) strong linkage effects which are adequately exploited; then, eventually, the economy will grow and diversify to the point where the concept "staple economy" will no longer suffice to explain its development adequately. Population growth will become the result of natural increase more than of immigration. Per capita income will rise beyond the level consistent with the definition of underdevelopment. With the gaining of entrepreneurial confidence and the expanding opportunities of the market, local entrepreneurs will replace foreign suppliers of manufactured products. A well developed secondary manufacturing sector serving local and foreign markets will emerge and staple-exports will eventually fall as a percentage of national income. If land remains relatively abundant, as is the case in Canada, this last step may not happen early in the process of development.

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1 Interpreted here as meaning the growth and diversification of the manufacturing sector.

2 Watkins, M.H., Op. Cit., p. 150.

The staples theory reminds Canadians that their economic development has always depended heavily upon developments in other countries i.e. conditions upon which the government and people have had little or no control.

The next section deals with the examination of three theories of growth; location, pôles de croissance and staples theory, with particular reference to their regional implications.

D Assessment

Traditional theory had ignored the spatial aspect of economic behaviour. The classical models and the reasoning behind them were based of the assumption of "one point" economies without any dimension in time and space. The main questions asked were: what to produce, how to produce, for whom to produce? These aspects were analysed for a world in which distance and transportation costs did not exist. The actual knowledge about the working of the economic system can be substantially increased if space is introduced into the analysis as another variable. This is the purpose and usefulness of location theory.

Location theory explicitely recognizes the interrelationships between different types of economic activities rooted in geographical separation. Much greater emphasis is placed on examining the choice of location for production

than for consumption. It is the producer's interest which determines the location not only of production but also of most consumption. This is the case in spite of the fact that there is often a definite conflict between the interests of the consumers and producers. For example, factory towns and suburbs close to the place of work are usually less desirable places for the enjoyment of life than open areas away from industrial centers of the cities. However, the cost of commuting, monetary and physical, keeps the bulk of consumers close to the location where they earn their living.

Little use has been made of the principles of location theory in analysing the early development of regions in Canada and United States. The series of stages described by European[1] economic historians did not lend themselves easily to an explanation of the pattern of growth of the latter countries.

Doubtless there are new-world settlements that developed as the "stages" theory would predict but most migration and settlement was, and is, a response to what Innis called commercialism, and later, capitalism. The former, represented by the Hudson's Bay Company and the cod fisheries, were trading ventures for scarce, high value, natural products. The latter, represented by mining, pulp and paper and steel, involved heavy

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1 Lösch, Weber and Von Thünen among others.

investment in fixed capital.[1]

Although once solidly entrenched in Canadian studies, the staples approach has now fallen on more uncertain days. The strongest attack comes from Kenneth Buckley,[2] who maintains that it is "practical and efficacious" as a theory of economic growth to 1820, but thereafter, "other sources of national economic growth and change" are impossible to ignore.

Another author Hugh Aitken,[3] has placed emphasis on the new resources industries of the twentieth century. In commenting on Buckley's paper, he suggested that the staples theory was relevant to at least 1914; and still continues to be the fundamental basis of any study on Canadian economic development:

> "Why then assert that the usefulness of the staple approach ceases in the early nineteenth century? ... It is true that as an economy becomes more complex, one finds it less adequate to interpret its development purely in terms of staple production. Other approaches must be utilized to supplement, but not supplant, the familiar concepts of the staple approach."[4]

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1 Scott, A.D., "Policy for Declining Regions: A Theoretical Approach", in Areas of Economic Stress in Canada, Wood and Thoman, ed., Proceedings of a Conference, Queen's University, Kingston, Ontario, 1965, p. 79.

2 Buckley, K, "The Role of Staple Industries", Journal of Economic History, December 1958, p. 450.

3 Aitken, H.G.J., "Discussion", Journal of Economic History, December 1958, p. 451.

4 Aitken, H.G.J., Op. Cit., p. 451.

In his more recent writings, Aitken[1] has re-emphasized that the pace of development in Canada is determined fundamentally by exports that enable the country to pay its way in the world.

Is the staples theory relevant to Canada today? Is the country unable to grow at a satisfactory rate unless exports lead? Whatever the answers are to those questions, the dominant role played by the export of articles having a large natural resource content is a fact. The development of most regions of North America can be explained largely in terms of the changing demand for, and supply of the main staple products. Even today, a large proportion of the growth in the secondary and tertiary sectors of the economy is the result of development of productive facilities to service the primary sector.

Seen in this context, the problem is not of purely Canadian interest. Many of the underdeveloped areas of the contemporary world face similar conditions and have much to learn from the Canadian experience.[2]

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1 Aitken, H.G.J., American Capital and Canadian Resources, Harvard University Press, Cambridge, 1961, p.74.

2 Aitken, H.G.J., Op. Cit., p.452.

It is becoming more and more fashionable nowadays to talk about creation, establishment or promotion of "pôles de croissance" when it comes to regional economic planning. The concept, however, is far from being well defined. Professor J.R. Lasuen describes the situation as follows:

> "The concept of "pôle de croissance" (growth pole), along with related concepts such as growth centres, development poles, core regions, and regional centres, has become an idea in "good currency". It is referred to widely in the social sciences on both sides of the Atlantic, and enjoys the privilege of all mythic catchwords; on the one hand, it sounds like a useful concept for social policy; on the other, being loosely defined, it is not easily subject to meaningful tests. When the concept is used in planning, the failures of the policies centred upon it are normally attributed to the ways and means by which it has been implemented, never to the adequacy of the concept itself. As an idea in good currency, it can suffer the lot of most of them: they pass away, undestroyed, but tarnished by their inefficiency".[1]

A great deal of confusion arises as a result of the fact that Professor Perroux's introduction of the term in the literature not as an operational concept as such but primarily as an explanation of the basic pattern of economic history. Economic development, indeed, did not proceed equally among countries of the world or regions of any one country. On the contrary, it originated in certain dynamic cities, characterized by an aggregation of active economic units, and extended in surrounding areas linked with the pole. This is where the

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1 Lasuen, J.R., "On Growth Poles", Urban Studies, Vol.6., No. 2, June 1969.

concept becomes interesting for planners and politicians. A region is depressed because it lacks a growth pole to create linkage effects. If the normal mechanisms of free economy do not favor the establishment of the conditions favourable to the creation of such a pole, government intervention is strongly suggested.

The modern notion of "pôles de croissance" and its refinements, considered as a revolutionary idea in the early 1960's, has now become the basis of planning policies of several countries including France, Greece, Brazil and Italy.

However, the application of the principles did not always follow Perroux's thinking. For instance, the distinction between economic space (where economic links are present) and geographic space have often been neglected, that is, the depressed regions have been chosen for the establishment of growth poles.[1]

Most public authorities are reluctant to consider the possibility that development in poor regions may best be promoted by investment in rich regions. There is even greater hesitancy to encourage the people to move from slow growth regions to the rapidly developing ones. For many politicians, the principle of maximizing economic development means reducing the differences in income and employment opportunities

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1 Higgins, B., et al., Op. Cit., p. 113.

that exist in various areas of the country.[1] But it should be emphasized that efforts directed at realizing such objectives do not necessarily mean that mass investment in the poor regions represents a solution.[2]

The Canadian Government has come up with many programs[3] designed to help the people of the stagnant regions in their respective depressed areas. Not enough effort was made to encourage and facilitate the relocation of those people.

The Province of Quebec, despite its full acceptance of French concepts and practices of regional planning,has come close to making the same "mistakes". The Gaspé region, which has served as a pilot region, is perhaps the poorest and most stagnant area in the entire province. The development policy would bring more tangible results if the poles were established in relatively developed and dynamic regions. The

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1 The classical theory implicitely assumed that the growth of national income meant the reduction of regional differences. The explanation given by the pole de croissance theory is likely to lead to opposite results. Indeed, a substantial increase in capital investment in one or several definite areas will most probably be translated into greater disparities between regions and will result in the increased need for a redistribution policy to tone down the pole de croissance encouragement in such a manner so as not to create too much inequality. Moreover, the concepts of polarisation and linkages override the classical assumption of diminishing returns on capital.

These two contradictions call for further assessment of the pole de croissance theory complemented by empirical studies to see whether or not it would be applicable to the regions of the province of Quebec.

2 Boudeville, J.R., Op. Cit., p.99.

3 A.R.D.A., A.D.B., P.F.R.A., and others now under the administration of the Federal Department of Regional Economic Expansion.

spread effects emanating from the latter would be beneficial to the stagnant areas.

The "pôles de croissance" theory has brought a lot to the theory of economic development. It has been applied to the theory of industrialization and to various doctrines of nationalization. It has also served to formulate effective solutions to problems facing underdeveloped countries:

> ".... en ce sens qu'une croissance polarisée, programmée et structurée dans l'espace peut s'avérer très utile pour empêcher les concentrations massives et malsaines dans quelques régions".[1]

There are some problems in the implementation of the "pôles de croissance". Most of the difficulties, though, stem from the present state of the evolution of the theory itself. If the concept is to become a more effective tool of analysis, as Professor Perroux would like it to be, it must be a great deal more elaborate and refined than it is at the present time. Here is one field where much more empirical knowledge is necessary before policy recommendations can be formulated with confidence.[2]

Location theory in its original form, (i.e. as presented by the German authors mentioned earlier), is applicable to European countries, but has less relevance in North America. For instance, in Canada, capital came mainly from

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1 Boudeville, J.R., Op. Cit., p. 100.

2 Higgins, B., Economic Development, W.W. Norton & Co., New-York, 1963, p.709.

abroad at the beginning. The process of capital accumulation was then much shorter than the one of most countries of Europe. Profits emerging from the exploitation of the export base were partly used to expand this base.[1] The growth of population and income brought increased savings to foster further development in related and in new activities.

To sum up, the success of the export base has been the determining factor of the rate of growth of the Canadian economy. The first effect of the growth of an export base is to determine the incomes and then the amount of secondary and tertiary activities that will develop. It also affects the distribution of population, the pattern of urbanization, the quality of the labour force, the social and political attitudes and the sensitivity of the latter elements to fluctuations of income and employment.

In this broader view, the location theory and staples theory have much in common. The concept of location can be extended to include the linkage effects that a particular industrial pattern has on the rest of the economy. This supposes uneven rates of growth among different regions of the same country and the need to create "pôles de croissance" to eliminate or reduce these inequalities.

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1 To the extent that they remain in the country.

E Applicability of Theories to an Examination of the Development of the St.Maurice Region.

The economic development of the St.Maurice region, as will be discussed in Chapter V, centred around two important inputs, that is, forest and hydroelectric power.

Forest products have been mainly exported to the other regions of Canada and to the United States. Although a certain amount of electricity has been sold outside the region, the greatest portion has been used in the power-hungry industries located in the area, and, electric power could therefore be considered as an element of the exportable commodities produced in these industries.

Thus, the economic expansion of the St.Maurice region can be linked to the external demand for a certain number of goods and services produced in the region. For that reason, the export base theory, which states that the growth of a region depends upon the growth of its export industries, can be used to explain the history of economic development of the St.Maurice region.

The staple theory presents a rather simplified expression of certain important characteristics of the historical development of the St.Maurice region particularly in

the more diversified regional economy of today. However, it gives a fairly adequate picture of the early pattern of growth when the dependence on export staples was more pronounced..

The location theory can also be used to illustrate growth in the St.Maurice region but to a lesser extent.. It cannot explain, for instance, cyclical declines in economic activity that are taking place in a region, whereas the staples approach can do so by taking factor migration[1] into account.

Indeed, the region did not go through the series of stages described by European economic historians mentioned above, that is, from agricultural self-sufficiency, to division of labour, to improvement in transportation, to selling products to neighbouring regions until the pressure on the land, the accumulation of capital and the induced discovery of new manufacturing techniques led to industrialization and international trade.

Rather it began with selling raw materials and progressively more specialized commodities for international markets and accordingly was highly dependent on foreign capital to set up its industries.

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1 Labour-force and capital.

However, a more recent application of the location theory was developed in an empirical study of the regions of United States.[1] This study mainly aimed at interpreting United States regions' growth in terms of the dynamics of their particular industrial structure..

It has nothing of a formal theory of growth[2] but it is built upon a framework of analysis that attempts to indicate the significant features that a disaggregated theory might be expected to contain.[3]

The basic assumption is that since a region is a component of the national economy, it can be considered as a weighted representation of a set of national industries. This feature refers to the shift technique of analysis[4] that will be used extensively in this thesis.[5]

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1 Perloff, H.S., Dunn, E.S., Lampard, E.E. and Muth, R.F., Regions, Resources and Economic Growth, University of Nebraska Press, Lincoln, 1960.

2 The industry-orientation of the approach limits the degree of abstraction.

3 Richardson, H.W., Regional Economics, Weidenfeld and Nicolson, London, 1969, p.342.

4 The shift technique is concerned with regional changes in indicators of economic activity between two defined points of time, and, in particular concentrates on whether the regional change is greater or less than the national average change.

5 See Chapters III and V.

The basic assumption behind the pole de croissance concept is that economic activity tends to agglomerate around certain focal points.

The concept of pole de croissance however cannot as such be linked to the experience of the St.Maurice region as a whole. The development of the region, characterized by the establishment of one or several key industries at some given locations can be best explained by the industrial complex analysis developed by W. Isard.[1]

The concept of pole de croissance is related to some notion of an optimum size of production and population centres at which maximum advantage is gained from scale and external economies without incurring serious diseconomies of agglomeration.[2]

Trois-Rivières, the largest agglomeration of the region, can hardly be called a growth pole:

> "Il serait difficile de trouver une ville plus éloignée du concept de pôle de croissance. La structure de la ville, à l'opposé d'une agrégation d'entreprises dynamiques et innovatrices, générant des effets d'entraînement, est un centre d'industries traditionnelles." [3]

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1 Isard, W., Methods of Regional Analysis, The M.I.T. Press, Cambridge, 1960, Chapter 9.

2 Richardson, H.W., Op. Cit., p.423

3 Higgins, B., et. al., Op. Cit., p.29

However, the notion of growth pole has widened the perspective of policy formulation by identifying the regions to be developed as meaningful economic entities and by recognizing that certain cities within a region have greater dynamic potential than others.. Although it cannot be used as such to explain the early development of the St.Maurice region, the concept of pole de croissance is likely to be the base of the regional development policies in the province of Quebec and its regions in the future..

CHAPTER III

THE ST.MAURICE ECONOMY - GROWTH OF POPULATION AND LABOUR FORCE.

A Methodology

In the delineation of a region, allowance must be made for political boundaries and administrative and socio-historical realities. The basic criterion is to select as large an area as possible for which meaningful generalizations can be made. The areas and regions should represent the best possible combinations of structural, functional, production and marketing factors, taking into account the availability of statistics.[1]

The relevant data in Canada are available on the basis of counties and census divisions. Many counties are artificially determined, that is, they do not take into account homogeneous geographic or economic factors. It is admitedly difficult to establish a delineation that satisfies all criteria and is at the same time workable.

In this thesis, the St.Maurice region is delimited according to the classification developed by the Department of Defense Production in 1953 and 1954.[2] The purpose of

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1 Camu, P., Weeks, E.P., Sametz, Z.W., Economic Geography of Canada, Macmillan of Canada Limited, Toronto, 1964.

2 Economics and Statistics Branch, Economic Zoning of Canada and the D.D.P. Geographic Code, Department of Defence Production, Ottawa, 1955. (revision in 1954)

this classification was to establish a basis for the formulation of policies concerning the distribution of defense contracts. Factors taken into account included elements of geography[1], population, communication facilities, resource endowment, industrial structure and distribution of services.

This classification makes possible the use of comparable statistics on a county basis for the entire period under study, that is, from 1901 to 1961.

On a county basis, the St.Maurice region includes Berthier, Maskinongé, Champlain, St.Maurice and Nicolet.[2]

The region can also be divided into two sub-regions. The first includes the counties of Berthier, Maskinongé and Nicolet and is in the main agriculture oriented. Maskinongé and Berthier are half industrial and half agricultural. Nicolet is mostly agricultural with its important industries devoted to the processing of agricultural products.

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1 The geographic characteristics of the St.Maurice region are represented by an arable fringe of land around the St.Lawrence river and by forests in shield mountainous areas of the north.

2 Nicolet is included in the region because of its strong functional relationships with the Trois-Rivières area.

The second sub-region consists of the counties of St.Maurice and Champlain. It is mainly industrial and constitutes the most populated and urbanized part of the region. In this thesis, a good deal of the analysis is concerned with the growth paths of those two sub-regions within the St.Maurice region.

One of the main economic indicators examined in this thesis is population. Variations in the size, density and age of the population are long-term phenomena essential in a study of economic growth:

> "Il n'est pas possible de dissocier l'étude économique de l'étude démographique d'une nation." [1]

Population constitutes the demand for the goods and services produced on the one hand and the supply of active population to the productive activities on the other hand.

On the supply side, for example, the availability of a certain type of labour force can be a decisive factor in the intention for an industry to locate in a particular area.

On the demand side, the presence of a sufficiently large population can also be of importance in the establishment of a market-oriented industry.

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1 Lebel, Gilles, Horizon 1980, Ministère de l'industrie et du commerce, Québec, 1970, p. 8.

Population and labour force characteristics and changes are interrelated in such a way that one cannot study the evolution of one without taking the other into account. From a statistical point of view, the data are more readily available for population than for labour force at the regional and county level in Canada. For this reason, the greatest part of the chapter is devoted to an examination of population characteristics, supplemented by some considerations of the labour force.

As will be seen later, the study of the labour force reinforces in many instances the conclusions reached in the examination of population characteristics.

B Population Growth

a) Distribution of Population of the Region as a Whole.

The questions to be answered in this section are whether or not there is an even distribution of population over the area and to what degree this distribution has changed over time. The coefficient of concentration shall be used to give an approximate answer to the first question. This coefficient was developed by E. Hoover in his study of the distribution of population in the United States.[1]

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1 Hoover, E.M., "Redistribution of Population 1850-1940," Journal of Economic History, Vol. 1, November 1941, pp. 199-205

The value of the above-mentioned coefficient varies between 0 and 1.

A low coefficient reveals a fairly even distribution of population, and a high coefficient reveals an uneven distribution.[1]

Table 1 shows the coefficients of concentration of population of the St.Maurice region for the 1901-1961 period.

Table 1

Coefficients of Concentration of Population, St.Maurice Region, 1901-1961.

1901	-	.324
1911	-	.293
1921	-	.295
1931	-	.345
1941	-	.345
1951	-	.329
1961	-	.305

These coefficients were calculated from Table C-1 in Appendix C.

They indicate two main waves of population concentration: the first occurring during the initial industrialization of the region in 1900, which grouped population around only a few major urban areas

1 See Appendix A-1 for computation of coefficient.

and the second during the subsequent phase of industrialization around 1931 which was marked by the return to the cities of the region of a number of people who had previously emigrated to the United States[1] where they had become strongly industry-oriented.[2]

The trend noticed in the last three decades under study indicates that the most populated counties (those which contribute to concentration) are experiencing slower rates of population growth.

Indeed, when the population of the province was growing at a rate of 15.9 percent during the period 1931 to 1941, the region was expanding at 12.8 percent. The gap between the province and the region widened in the 1941 to 1951 period to 21.7 percent and 16.6 percent respectively. This trend continued throughout the 1950's and the 1960's. To summarize:

(a) The population has tended to become less concentrated since 1941 after two successive waves of concentration starting in 1901 and 1931.

(b) The rate of increase in the population of the region has become relatively smaller in relation to the rate of increase of the province and this trend is continuing.

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1 Blanchard, R., Le Centre du Canada Français, Librairie Beauchemin, Montréal, 1947, p. 111.

2 In the textile plants of New England.

The second question asked at the begining can be answered with the use of the coefficient of redistribution, that is, at what rate the redistribution of population (change in concentration) has occurred.

Developed by Hoover[1] and Florence[2], this coefficient, instead of comparing the proportion of population and the area of a county to the region, compares the percentage of population residing in a county at different times. The coefficient shows the minimum percentage of persons who would have to change their areas of residence in a given year to produce the proportion that existed in an earlier year[3].

Table 2 shows the coefficients of redistribution for the applicable years.

Table 2

Coefficients of Redistribution of Population, St.Maurice Region, 1901-1961.

1901 - 1911	-	.050
1911 - 1921	-	.068
1921 - 1931	-	.062
1931 - 1941	-	.013
1941 - 1951	-	.026
1951 - 1961	-	.035

1 Hoover, E.M., Op. Cit., pp. 199-205.

2 Florence, Fritz, Gilles, "Measures of Industrial Distribution", in Industrial Location and National Resources, U.S. National Resources Planning Board, Washington, D.C., 1943, ch. 5.

3 See Appendix A-2 for computation of coefficient.

The above coefficients were calculated from Table C-1 in Appendix C. For example, in 1961, 3.5 per cent of the population would have to be displaced in order to have the 1961 distribution equal to the 1951 distribution. The same reasoning applies to all other years.

Table 2, indicates that the rate of change of distribution of population is smaller in the last three decades than in the first three. Such a high rate in the first three decades shows how far the region was new and how rapidly this new region, populated mostly by young men or couples, could change its distribution of population.

The same phenomenon seems to be repeating itself to a lesser extent in the last three decades, indicating that the population is relatively young and ready to move to any new place where work or better opportunities are offered.

The fact that coefficients are increasing at such a rate explains partially not only the out-movement of population of the rural counties into urban counties but also the migration mainly in favour of the population hungry region of Montreal:

> "L'augmentation constante de la part relative de la région de Montréal est le reflet des mouvements de concentration des populations situées dans les régions périphériques et excentriques vers la métropole." [1]

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1 Hirsch, R.D., Les origines et la nature des déséquilibres régionaux du Québec, Conseil d'Orientation économique du Québec, Québec, 1967, p. 71.

An analysis of the migration movements inside and outside the region would be helpful at this stage. Such a breakdown is not available in the existing statistics.

Limited information is available in a study made by the Research Bureau of the Department of Industry and Commerce in Québec.[1] It indicates that between 1951 and 1961, there was a net out-migration of 23,511 people or 7 percent of the 1951 total population in the St.Maurice region.[2] This compares with in-migrations of respectively 43[3] and 16 percent in the region of Nouveau-Québec and Montreal and an overall gain of some 5 percent for the province as a whole.

b) Population Shifts among Counties of the Region.

The preceding section was devoted to an examination of the distribution of the population and of the rate of change of population for the St.Maurice region as a whole. In this section, a closer look is given to the county level to see what counties contributed to increase or decrease the concentration of population in the region.

One way of evaluating the size of the changes in the population is to work out the percentage increase or decrease from one year to another. But the percentages

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1 Bureau de recherches économiques, Migration nette 1931-61, Ministère de l'Industrie et du Commerce, Québec, 1962.

2 Includes two counties in addition to those examined in this study.

3 The population in 1951 was only 42,664.

do not give a complete picture, and, in some instances, may give erronecus ideas about the magnitude of such movements if for example the base upon which those percentages are calculated vary widely.

No fully satisfactory way of combining percent and absolute changes has yet been devised to measure differential economic growth. However, by using a "shift" method of presenting data, it is possible to see the relative size of the gains or losses among the areas being compared.

This method helps to avoid the distortion apparent when percentage figures alone are used. The merit of this method lies in its focus on the differential rates of regional change, rather than on total changes, which tend to hide the differential through sheer weight of numbers.[1]

The latter technique measures the relative gains and losses among the counties with regard to a given variable (here population growth) in comparison to a larger area, (region or province) the St.Maurice region in this section.[2] The technique is also applied to the relative changes in rural and urban sectors in the next section.

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1 Perloff, H., How a Region Grows, Supplementary Paper No. 17 S, Committee for Economic Development, New-York, 1963, p. 57.

2 See Appendix A-3 for an explanation of this technique.

The shift technique reveals the difference in actual growth of total population in various years in each of the counties under study and what the value would have been if the counties had grown at the same rate as the St.Maurice region as a whole.

Table 3 expresses the shift of population in both absolute and percentage terms for the census years 1901 to 1961.

Table 3 shows that the counties of Berthier and Nicolet had downward population shifts for each of the six intercensal periods under examination. Maskinongé had an upward shift in population only once and of relatively small importance in the 1931 - 1941 period. These counties have either suffered a loss of population or they have had a gain which was less than that applicable to the region as a whole.

The reverse situation can be observed in the counties of Champlain and St.Maurice. These counties account for five out of six upward population shifts in the period under study.

The data indicate that the rural or largely rural counties account for the downward shifts in population and that the predominently urban and industrialized counties account for the greatest share of upward shifts in population. The relatively uniform distribution of the values of downward shifts for Berthier, Maskinongé and Nicolet reveals the continuously declining relative importance of these counties.

Table 3

Total Population Shifts Among Counties, St.Maurice Region, 1901-1961.[1]

Period	Berthier	Maskinongé	Nicolet	Champlain	St.Maurice
			Numbers		
1901-11	-3,603	-1,857	-1,752	+ 6,441	+ 771
1911-21	-3,777	-2,342	-5,730	+ 2,318	+ 9,531
1921-31	-3,617	-2,284	-4,807	- 1,060	+11,768
1931-41	- 772	+ 112	-2,262	+ 522	+ 2,400
1941-51	- 51	-1,756	-4,748	+ 6,390	+ 165
1951-61	-1,977	-1,816	-5,134	+10,309	- 1,382
			Percent		
1901-11	-50.0	-25.7	-24.3	+ 89.3	+ 10.7
1911-21	-31.8	-19.8	-48.4	+ 19.5	+ 80.5
1921-31	-30.7	-19.4	-40.8	- 9.1	+100.0
1931-41	-25.5	+ 3.7	-74.5	+ 17.2	+ 79.1
1941-51	- 0.7	-26.8	-72.5	+ 97.4	+ 2.6
1951-61	-19.1	-17.6	-50.0	+100.0	- 13.3

1 Computed from Table C-1.

The St.Maurice Economy - Growth of Population and Labour Force.

The counties of Champlain and St.Maurice have experienced fluctuating shifts demonstrating the volatile nature of population growth in urban areas. For example, in the 1921-1931 period, the St.Maurice county accounted for all the upward shift in population as did Champlain in the 1951-1961 period. The first is explained by the attraction of people to the Shawinigan area in a period of diversified and rapid industrial development.[1] The second is understood by the fact that the twin-cities of Trois-Rivières and Cap-de-la-Madeleine, although not deserving the name of development "pôle" [2], is the only remaining area with some growth potential in the St.Maurice region. Heavy "emptying out" of Nicolet to the Trois-Rivières area is also an influential factor contributing to this upward shift.

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1 See Chapter V for further details on industrial growth in the St.Maurice region.

2 Capable of creating forward and backward linkage effects; Higgins, B., Martin, F., Raynauld, A., Op. Cit., p.123.

c) Rural and Urban Population Shifts.[1]

This section is concerned with the rural-urban shifts of population for the five counties that make up the St.Maurice region.

The population of the region as a whole increased by 176,924 or 142 percent between 1901 and 1961. This compares with an increase of 220 percent for the province. The growth has not been even during this period. Table C-2, in Appendix C, indeed, reveals increases varying from as low as 5.6 percent in the 1891 to 1901 period to more than 18.5 percent in the 1951 to 1961 period.

The province shows higher increases in population for almost all the years, which explains the declining share of the region's population with regard to the province.

Urban and rural population shifts can be caused by many factors including different birth and death rates and also by the extent of interregional migration. It is assumed that, because of the homogeneity of the population in

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1 The 1951 and 1961 definitions specify that all cities towns and villages of 1,000 and over, whether incorporated or not, are classed as urban. The remainder of the population is classed as rural.

Prior to 1951, the population residing within the boundaries of incorporated cities towns and villages, regardless of size was classified as urban and the remainder as rural. The urban population is accordingly overstated in most counties under study because of the incorporation of small villages long before the existing industrial cities were established.

the region and in the province, the fertility and mortality rates do not differ markedly from county to county. Internal migration would thus be the leading factor of population shifts within the region.

Urbanization has significantly affected migrations within the St.Maurice region just as it has affected the country as a whole:

> "Canadian urbanization has partially resulted from and determined the concentration of economic advances at a relatively few specific points in geographical space."[1]

Among the factors that have brought about this concentration is the external demand for the products manufactured in the region i.e. pulp and paper, aluminium and chemical products.

Table 4 shows the absolute and percentage shifts of rural and urban population for the period under study.

Over the last sixty years, the region has witnessed high rates of change in rural population.[2] At the same time the region experienced higher rates of increase of urban population than the province as a whole i.e. 800% and 600% respectively. In part, this is due to the smaller base upon which the percent was calculated in addition to the

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1 Stone, L.O., Urban Development in Canada, 1961 census monograph, Dominion Bureau of Statistics, Ottawa, 1967, p. 18.

2 Rural population, mainly centered around the St. Lawrence river, was established there from the early seigneurial years of the French Regime.

Rural and Urban Population Shifts Among Counties, St.Maurice Region, 1901-1961.[1]

	Rural Shift.					Urban Shift.				
				Numbers						
	Berthier	Maskinonge	Nicolet	Champlain	St.Maurice	Berthier	Maskinonge	Nicolet	Champlain	St.Maurice
901-11	-1360	- 75	- 183	+3229	-2615	-1474	-1019	- 162	+4079	-1424
911-21	+ 484	+1581	+ 977	-4350	+1308	-1769	-1440	-3406	+9092	-2477
921-31	- 896	-1063	-1652	+2683	+ 928	- 909	+ 687	- 477	-4971	+5670
931-41	- 477	- 184	+1326	+ 407	-1072	- 481	+ 127	-3840	+ 65	+4129
941-51[2]	+ 376	+ 586	- 335	-2230	-1603	+1565	- 606	- 885	+8612	-8686
951-61	-2015	- 76	+ 422	+2368	- 699	+2392	+ 663	-1021	+6218	-8252
				Percent						
901-11	-32.3	- 1.7	- 4.3	+100.0	-61.7	-36.1	-24.9	- 3.9	+100.0	-35.1
911-21	+11.1	+36.3	+22.5	-100.0	+30.1	-19.4	-15.8	-37.5	+100.0	-27.3
921-31	-24.8	-29.4	-45.8	+74.3	+25.7	-14.3	+10.8	- 7.5	-78.2	+89.2
931-41	-27.5	-10.6	+76.5	+23.5	-61.9	-11.2	+ 2.9	-88.8	+ 1.5	+95.6
941-51[2]	+14.6	+22.8	-13.1	-86.9	+62.6	+15.4	- 5.9	- 8.7	+84.6	-85.4
951-61	-72.2	- 2.7	+15.2	+84.8	-25.1	+25.8	+ 7.1	-11.1	+67.1	-88.9

1 Computed from Table C-4 in Appendix C.

2 Changes in the definition of rural and urban population as noted on page 58 may have a distorting influence on the population shifts for the period 1941-1951. This bias however cannot be evaluated with the available data.

fact that the forces of urbanization were felt with nearly the same impact as in the more industrialized region of Montreal. This is particularly evident in the first two decades of the Century.

Meanwhile, the rural population barely doubled in both the province and the region. The significant differential in rates of population growth between urban and rural areas applies not only to the period as a whole but also to individual decades.

Table C-5 reveals that in each of the six intercensal periods from 1901 to 1961, the rate of increase of the urban population of the region was many times higher than that of the rural population except for the 1931 to 1941 period. The effects of the Great Depression can be clearly seen here. In periods of depressions, people usually move "back" into contracting areas of net emigration, and "back" into contracting industries such as logging, fisheries and farming.

> "Entre 1901 et 1961, les régions du Bas St.Laurent, Trois-Rivières (St.Maurice region), Québec et Outaouais connaissent toutes cette lente mais constante déperdition relative de capital humain. On aura noté l'incident de parcours consécutif au retour à la terre de nombreux québécois fuyant les conditions de vie pénible créées dans les grandes villes par la crise - de 1931 à 1941!"[1]

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1 Ministère des Affaires Municipales, Choix de l'emplacement du nouvel aéroport international de Montréal, Québec, 1970, Annexe III, p. 2.

The St.Maurice Economy - Growth of Population and Labour Force.

The St.Maurice region had a much higher rate of urbanization than the province in the first two decades and a somewhat lower rate thereafter except in the 1941-1951 period which corresponded to an increased level of activity brought in by the war effort.

This difference in growth patterns is attributed partly to the level of out-migration which was higher for the region than for the province in the last few decades under study.[1]

Table 4 indicates the comparative gains and losses of each county at the rural and urban level. It reveals that the two most populated counties of Champlain and St. Maurice accounted for the greatest part of both urban and rural shifts.

Champlain accounts for the largest shifts of population in two instances at the urban level and four times at the rural level. Indeed, this county has in absolute terms, more rural people than any other county in all the years under study and comes second in the absolute number of urban population. Even the more urbanized counties are

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1 Census data indicates that between 1941 and 1951, there were net out-migrations of 0.7% and 0.4% of 1941 population for the region and the province respectively. The corresponding figures for 1951 and 1961 are a net out-migration of 0.5% of 1951 population for the region and a net in-migration of 5.1% for the province.

showing a decreasing relative share of urban population growth.

Champlain for example accounts for a smaller proportion of urban shift and a greater proportion of rural shift, and St.Maurice shows a decreasing proportion of both, while Berthier and, to a lesser extent Maskinongé, account for a growing proportion of urban population. This is probably due to a later and significant urbanization of the latter counties and of the relative stagnation of the whole region particularly the most urban-industrialized counties. The preceeding discussion calls for an overall examination of the different measures studied.

Table 3 indicated that only in the counties of Berthier and Nicolet were population shifts negative for the whole period under examination. According to Table C-3, these two counties are the only ones to have experienced a continuing decline of population in relation to the region. Maskinongé shows a similar pattern except for the intercensal period 1931-41 where it accounts for some 3.7 percent of the positive shift of the region. Maskinongé was thus an area which people moved into during the Great Depression in order to avoid the difficulties of urban living especially of nearby Montreal area.

Champlain shows positive shifts in all the years except for the 1921-31 period which corresponds in Table C-3

to a decreasing share of population relative to the region. St.Maurice also shows a negative shift in population in the 1951-61 period because of a decrease in its relative share of the region's population.

Thus a direct relationship exists between total population comparative shifts and the percentage share of each county's population to the region's. There also exists a positive relation between the direction of total population shifts (Table 3) and urban population shift (Table 4) in 5 out of 6 periods for the county of Champlain and a negative relation for the county of Nicolet. In the latter case, the relation holds in all the years because of the homogeneity of the rural population throughout the area.

Maskinongé and St.Maurice do not show any fixed relation probably because of the mixed nature of the population. The positive shifts in total population appear directly linked to positive shifts of urban population. There exists no such clear cut relation with movements of total population and rural population. This implies that urban population growth directly affects total population shifts.

d) Age Distribution.

The general pattern of urban-rural differentials in the region is complemented by a study of the age distribution

of the population. The aggregate population of each county is considered here instead of its elements of urban, farm and rural non-farm because of the absence of such an information prior to 1951. As mentioned earlier the counties of the St.Maurice region can distinctively be classified as urban or rural except Champlain which has always presented characteristics of both.[1]

Table 5 shows the ages of the people as percent of the total and by counties for the years 1901, 1931 and 1961. The age groups are from 0 to 24, 25 to 64 and 65 years old and over. For the purpose of this computation, the mature part of the labour force, i.e. the 25 to 64 group is taken as a basis . The 0 to 24 age group represents future manpower, although this is less true in the case of the earlier years when the working age was somewhat lower. The analysis takes this fact into consideration when interpreting the comparative figures. The 65 years and over group represents the retired or less active population.

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1 See Table C-4 for further details.

Table 5

Age Groups, St.Maurice Region by Counties and Province, 1901, 1931 and 1961.[1]

	1901	1931	1961
Berthier			
0-24	60.6	56.7	52.8
25-64	34.1	37.0	39.4
65 +	5.3	6.3	7.8
	100.0	100.0	100.0
Maskinongé			
0-24	60.0	59.2	53.7
25-64	34.5	34.9	39.4
65 +	5.5	5.9	6.9
	100.0	100.0	100.0
Nicolet			
0-24	60.0	53.4	53.1
25-64	34.8	40.3	37.8
65 +	5.2	6.3	9.1
	100.0	100.0	100.0
Champlain			
0-24	61.8	61.2	55.0
25-64	34.4	35.0	40.0
65 +	3.8	3.8	5.0
	100.0	100.0	100.0
St.Maurice			
0-24	59.5	59.0	52.2
25-64	36.3	37.5	42.3
65 +	4.2	3.5	5.5
	100.0	100.0	100.0
Region			
0-24	60.5	58.6	53.5
25-64	34.8	36.9	40.5
65 +	4.7	4.5	6.0
	100.0	100.0	100.0
Province			
0-24	58.2	53.8	51.3
25-64	37.0	41.5	42.8
65 +	4.8	4.7	5.9
	100.0	100.0	100.0

1 Based on Table C-6 in Appendix C.

The region has a higher percentage of the 0-24 age group than the province in all three cases. The 25-64 age group is more heavily represented in the province as a whole than in the "Mauricie".

It reveals that the young people tend to move out of the region in their prime ages of active work. It also means that the labour force attraction features of the industrial cities of Shawinigan and Trois-Rivières are not sufficient to absorb all the available supply of manpower.

The intra-regional migration is nevertheless going almost exclusively in the direction of the above-mentioned cities as shown by the consistently higher proportion of the 25-64 age group in the county of St.Maurice where the two centres are located.

The demographic growth appears to be stabilized by a decline in the "active" and the most fertile element of population.

e) Educational Level.

In view of the importance of education in developing more qualified manpower and more knowledgeable consumers reference is made at this point to the educational attainment of the population residing in the St.Maurice region. The concept of "education" used here is that of formal schooling. Although various forms of training after formal

education are of growing importance, data on these forms of education are not available as such. When comparing counties and the region to the province in the various years, it is assumed that a given year of schooling is equivalent in terms of educational quality.

The degree of education is an essential criterion in the appreciation of the quality of a given population. It reveals its productivity, its mobility, its desire for progress and better living.

For the St.Maurice region, the declining rate of increase in population and the out-migratory movements could be expected to cause a decline of the share of the school population in relation to the province.

For the purposes of this thesis, the population at school and the population that have been through school are examined for the years 1941, 1951 and 1961. Such information is not available prior to 1941 at the county level. For 1901 to 1931, the "literacy of the population" is used for comparison between the region and the province. The two periods, that is from 1901 to 1931 and from 1941 to 1961, are analysed separately and comparisons are relevant only within each period.

Table 6 shows the literacy rates of the population for 1901 to 1931 inclusively:

Table 6[1]

Literacy of Population,[2] St.Maurice Region and Province, 1901-1931.

	Region	Province
1901	75.9	77.9
1911	87.1	86.6
1921[3]	88.9	90.0
1931	90.0	90.2

An increase in literacy in noticed in both cases. In three out of four instances, the rate is lower in the region that in the province. Is the situation similar in each individual county?

Table C-7 shows that in 1901, Nicolet had a much higher rate than all the other counties and even higher than the province as a whole. From 1901 to 1911, all rates increase drastically at both levels but Nicolet still has an above the average literacy rate of 91.3%. This reveals the higher literacy capacity of well-established rural communities of Nicolet in the beginning of the Century.

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1 Based on Table C-7 in Appendix C.

2 Population, 5 years of age and over.

3 Estimated from subtracting the 5-9 age group.

As years go by, however, the differences in literacy rates between counties become less marked and a more reliable measure is required.

Table 7 shows the educational indicators for the years 1941, 1951 and 1961. The data reveal a similar pattern of the proportion of population at school in each of the census years, for the region and the province.

As for the educational attainment of the population who has left school, the trend is different between the two areas. The percentage of people with primary education remains higher in the region in 1961 after being about the same in the previous two periods. The proportion of the population with secondary education is larger in the province in 1961. At the post-secondary level the region is definitely underrepresented in relation to the province. A smaller share of the population at college or university means that the students do not come back into the region after graduation. This fact was important in the decision to establish a branch or a campus of l'Université du Québec at Trois-Rivières.

In all the counties, the proportion of children attending school at the primary level is lower in 1961 than in 1951. This is the result of (i) the out-migration of young

Relative Importance of Schooling of Population and of Population at School, St.Maurice Region and Province, 1941, 1951 and 1961.[1]

	Region			Province		
	1941	1951	1961	1941	1951	1961
Population at school	22.0	20.6	26.3	19.5	17.9	24.0
Primary	N/A	85.3	73.0	N/A	86.0	75.2
Secondary		12.1	24.8		10.9	22.1
Post-Secondary		2.6	2.2		3.1	2.7
Total		100.0	100.0		100.0	100.0
Population out of school	65.3	65.5	61.2	69.3	68.7	63.3
Primary	71.2	61.8	59.7	71.9	63.3	55.1
Secondary	25.4	32.9	36.8	24.2	30.7	39.3
Post-Secondary	3.4	5.3	3.5	3.9	6.0	5.6
Total	100.0	100.0	100.0	100.0	100.0	100.0
Population with no schooling (5 years of age and over)	1.1	0.2	0.1	0.6	0.1	0.0
Population, 0-4 years of age	11.6	13.7	12.4	10.6	13.3	12.7
Total population	100.0	100.0	100.0	100.0	100.0	100.0

1 Based on Tables C-8 and C-9 in Appendix C.

households[1] having primary school age children and (ii) the drastic drop in fertility rate that has taken place since 1951 in the province of Quebec.[2]

As expected, the urban counties of Champlain and St.Maurice show the lowest figures for the number of children attending primary school. It has indeed been demonstrated that the fertility rate was higher in rural farm and non-farm areas than in urban areas.[3]

The number of children attending secondary school has doubled in both the region and the province between 1951 and 1961. This reveals the general tendency for children to attend school longer than before especially in the last half of the 1950's.

Indeed, the Quebec Government entered the field directly by giving special grants to students, over the family allowance age, who were staying at school until the completion of the secondary level. The coming into

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1 Out of the net out-migration of 23,511 people between 1951 and 1961, noted earlier in this chapter, 7594 or 32.3% is accounted for by population of 20 to 29 years of age.

2 Crude birth rate (per 1,000 population) went from 29.8 in 1951 to 26.1 in 1961.
Fertility rate of women has dropped from 117.2 in 1951 to 108.6 in 1961. (per 1,000 women).
Source: D.B.S. Vital Statistics, Catalogue No. 84-202.

3 Henripin, J., Tendances et facteurs de la fécondité au Canada, Bureau fédéral de la statistique, Ottawa, Canada, 1966, pp. 105 ff.

high-school age of the "Post-War Babies" is also among the factors that contributes to such a increase in secondary school attendance.

Champlain and St.Maurice show a higher proportion of children at the secondary level than the province in both 1951 and 1961. At the post-secondary level, only St.Maurice has a proportion higher than the province for the two periods but not enough to bring the average regional rate to the level of provincial rate. This is understood in the light of Table C-4 where only the county of St.Maurice shows a proportion of urban population higher than the province for the entire period.

The urban areas are obviously in a better position to provide the population with the greater educational opportunities and the services that are required. The gap of opportunity between urban and rural areas is diminishing gradually with the introduction of a regional school system and the provision of transportation facilities to service the young people in adjacent areas.

To turn now to an examination of the educational attainments of the existing population which has been through school at one time or another.

Table C-9 in Appendix C provides data for 1941, 1951 and 1961 at the elementary, secondary and post-secondary levels. It also shows the proportion of people with no

schooling in the region and in the province.

The proportion of 5 years old and over that has only primary education is decreasing over this period although the St.Maurice region still has a larger proportion than the province in 1961. The latter trend and the trend toward a higher proportion having secondary education is only the reflection of the country-wide effort directed to develop a more educated and skilled manpower to fill up the modern job openings.

The high level of industrial activity during the war and post-war periods especially in chemical and related industries had drawn a great deal of specialized manpower into the region and had encouraged young people to undertake technical-oriented training.

> "En Mauricie, la grande industrie manufacturière est l'une des caractéristiques majeures de l'économie régionale et nombre de travailleurs ont été formés dans les industries de pâtes et papiers, les industries chimiques et électro-métallurgiques. Les travailleurs de la Mauricie se sont adaptés aux conditions particulières du travail en usine et leur "mentalité industrielle" constitue un facteur favorable."[1]

The declining proportion of the more educated people especially during the last decade under study indicates that the industrial areas of the St.Maurice region are not

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1 Girard, J., La Géographie de l'Industrie Manufacturière du Québec, Ministère de l'Industrie et du Commerce, Québec, 1970, p. 176.

attractive enough to retain the existing or potential specialized labour force.

C Labour Force Growth

The proportion of the general population which is willing and able to work in the production of goods and services constitutes the labour force. This section is an attempt to estimate the size of the labour force in relation to the total population of the St.Maurice region and the changes in both for the first sixty years of the present Century.

It further examines the changes in occupational and industrial structure of the labour force. Emphasis is given to manufacturing for two reasons: (a) more adequate data are available for this sector; and (b) it is the most dynamic sector as far as the growth of the region is concerned.

Prior to 1941, the censuses do not give the number of active population at the county level. Data are available for municipalities with population of 1,000 and over.

The census figures of 1941 are not based on the same assumptions as those of 1951 and 1961 censuses. The 1941 census defines gainful occupation as "one by which the person who pursues it earns money or in which he assists in

the production of goods".[1] It includes all persons of 14 years of age reported as having some occupation. Occupation is considered as a "characteristic" of an individual, akin to, say, language or years of schooling. It is viewed as a customary or habitual activity. In the 1961 and 1951 censuses, the labour force concept rather than the gainfully occupied concept of earlier censuses was used.

The chief difference between the two concepts is that the labour force approach measures employment characteristics at a given point of time, whereas, the gainfully occupied definition is more concerned with a person's usual activity and thus more difficult to apply consistently.

The definition of the labour force of 1961 was substantially the same as in 1951 except for the inclusion of Indians on Reserves and the exclusion of the 14 year-olds.

In addition to the above changes in definition, revisions of the industrial and occupational classifications have been made between censuses. For this reason, certain figures published in 1961 are not fully comparable with industry statistics of earlier censuses.

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1 Dominion Bureau of Statistics, Census 1941, Instructions to Commissioners and Enumerators, pp. 47-50.

a) Employment in Manufacturing Industries.

Employment in manufacturing industries by cities are the more readily available statistics, and also the ones that go farther back in time. The total population of the larger cities is compared to the total population of the St.Maurice region.

The comparison shows that the population in the main cities represent a growing proportion of total population of the region. Table C-10 reveals indeed that the total population of the nine larger cities of the region has increased from 13,789 in 1901 to 156,937 in 1961. From 11.1% in 1901, the population of these cities accounted for 52.1% of the total regional population in 1961.

Since most industrial installations are located in or nearby these centers, the industrial employment of cities are deemed representative of the whole region and of each county in which these towns are located. The employment in manufacturing industries of each city can thus be compared with the employment in the county that includes it.

Table 8 reveals that, in the four counties where adequate data are available, employment in the manufacturing industries is concentrated heavily in the larger centers.

Table 8

Employment in Manufacturing Industries, in Cities and Counties of the St.Maurice Region, 1901-1961.[1]

	1901	1911	1921	1931	1941	1951	1961
Berthierville	N/A	N/A	130	342	397	695	594
Berthier county	333	625	N/A	460	794	1,533	1,486
Cap-de-la-Madeleine	N/A	N/A	N/A	818	1,173	2,443	2,747
Grand-Mere	971	N/A	2,717	1,092	1,934	2,362	2,116
La Tuque	N/A	N/A	1,188	818	875	1,400	2,747
Total	971	N/A	3,905	2,728	3,982	6,205	7,610
Champlain county	1,846	2,383	N/A	2,984	4,786	7,528	7,675
Shawinigan	N/A	2,162	2,529	3,138	6,499	5,712	5,522
Trois-Rivieres	1,188	N/A	6,099	5,275	6,623	7,705	7,837
Total	1,188	2,162	8,628	8,413	13,122	13,417	13,359
St.Maurice county	1,536	6,806	N/A	8,703	13,260	13,606	13,540
Nicolet	46	N/A	132	N/A	382	344	342
Nicolet county	389	449	N/A	358	642	849	958

1 Computed from Tables C-11 and C-12 in Appendix C.

The bulk of the manufacturing activity is located almost exclusively in cities and this, in all the counties under study.

To consider now the situation at the county level and compare it with the province.

Table 9 shows the relative importance of the employment in manufacturing industries, as compared with the total population of the counties.

Table 9

Employment in Manufacturing Industries as a Percent of Total Population, St.Maurice Region and Province, 1901-1961.[1]

	1901	1911	1921	1931	1941	1951	1961
				Percent			
Berthier	1.6	3.0	N/A	2.3	3.7	6.2	5.4
Maskinongé	3.5	3.9	N/A	6.8	6.3	8.5	7.7
Nicolet	1.4	1.5	N/A	1.2	2.1	2.8	3.1
Champlain	5.7	5.4	N/A	4.9	7.0	8.7	6.8
St.Maurice	5.2	19.4	N/A	12.6	16.5	14.5	12.3
Region	3.7	7.4	N/A	7.0	9.4	9.9	8.4
Province	6.7	N/A	8.6	7.1	9.8	10.2	8.0

1 Computed from Tables C-1 and C-12.

The region had for the first time in 1961, a higher proportion of its population employed in manufacturing industries than the province. It has not followed the sharp decline at the provincial level between 1951 and 1961 resulting from the gradual switch to service industries.

At the county level, St.Maurice shows a much higher manufacturing ratio than the province for most of the years examined. It is also on a declining path and started to decrease one decade before the other counties. This is an indication of the maturity of the county, that is, the extent to which secondary employment gives way to tertiary employment.

In essence, the data suggest that manufacturing industries are a relatively important employer in at least three of the five counties under study, that is, St.Maurice, Champlain and Maskinongé, although the proportion of population in secondary industries shows signs of decline after 1951.

Since 1941, statistics are available for employment in various sectors of industry. This is the subject matter of the next section.

b) Industrial Structure of the Labour Force.

(a) Localization Coefficients.

This section attempts to ascertain what portion of total labour force of the St.Maurice region is employed in each industrial sector.[1] This makes it possible to evaluate not only what industries are concentrated in the counties of the region but also the degree of concentration.

The coefficient of localization[2], that is the relative employment in a given industry compared with the share of employment in all industries is used to measure the relative concentration of various industries in the region as a whole.

Table 10 gives the localization coefficients for the industries of the St.Maurice region in 1941, 1951 and 1961. The data for previous years are inexistant and great care has to be taken in dealing with statistics of the last three census years because of changes in classification.

Labour force classifications for these three years are comparable for agriculture, forestry, fishing and

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1 The sectors are the ones used by D.B.S. in their manufacturing statistics and censuses.

2 See Appendix A-4 for computation of coefficient.

trapping, mining and trade and finance.[1]

Table 10

Coefficients of Localization of Labour Force, St.Maurice Region, 1941, 1951 and 1961.[2]

	1941	1951	1961
Agriculture *	0.2532	0.3182	0.3585
Other primary (forestry fishing, mines) *	0.3245	0.3277	0.3375
Manufacturing	0.1598	0.0885	0.0808
Construction	0.1430	0.1154	0.0381
Transport, communication	0.1422	0.1174	0.0773
Trade and finance *	0.1353	0.1355	0.0844
Community, Business and Personal Service Industries	0.1139	0.0992	0.0771

Table 10 reveals that agriculture and other primary industries are by far the most unevenly distributed industries for the three years under study. The coefficients are also increasing between 1941 and 1961 indicating the growing concentration of input-oriented industries in the region.

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1 No attempt is made in this thesis to reconcile the comparability of the remaining categories. Such an exercise would be cumbersome even at the province's level and would not be worth the effort in terms of meaningful results. Some general indication of the employment structure over the three intercensal periods of 1941, 1951 and 1961 is the very purpose of this section and no further details are deemed necessary.

2 Based on Table C-13 in Appendix C.

* Comparable classifications 1941, 1951 and 1961.

The market-oriented industries such as construction, transportation, communication, trade, finance and services are more evenly distributed and the coefficients are decreasing. In short, the primary industries are becoming more concentrated while the service and manufacturing industries are becoming more evenly distributed across the region.

With the exception of agriculture and other primary industries, all coefficients decreased in 1951 and in 1961. Agriculture, of course, employed fewer people in fewer farms and it became more concentrated particularly in Nicolet and Maskinongé.[1] Agriculture, though, is not a growth industry. Forestry[2] is a fairly stable industry located mainly in the upper parts of Berthier, Maskinongé and Champlain. Prospects for growth of employment in that industry are not particularly promising.[3]

The declining coefficients of the "other industries" reveal that manufacturing and service industries[4] are becoming more evenly distributed in the region.[5] The latter industries being mostly located in large urban areas is an indication that the cities of Trois-Rivières , Shawinigan and

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1 See Table C-5 in Appendix C.

2 Mining and fishing are almost non-existent as an industry in the region.

3 See Chapter V for further details on growth industries.

4 It must be borne in mind that service industries cover a wide range of activities including transportation, communication, trade, finance and personnal services.

5 While they are more concentrated within each county.

Cap-de-la-Madeleine are not getting a proportionate share of the growth of employment in the manufacturing and service industries. In other words, the latter industries are becoming more evenly distributed over the whole region.

Although decentralization is basically sound for distributing economic activity equally to all parts of a region, it may at this stage not be the most desirable course to follow for the St.Maurice region in view of the declining role of the present industrial centers themselves.[1]

(b) Location Quotients of the Labour Force.

The location quotient[2] is more specific than the localization coefficient, i.e. it indicates in which counties particular industries are concentrated and to what degree. The quotients are computed for each county using the St.Maurice region as a base and then for each industry of the region using the province as a base.

Table C-14 in Appendix C gives the location quotients of the industries of the St.Maurice region using

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1 The reasons for that slower growth would have to be analysed in greater details before a decentralization policy is implemented.

2 See Appendix A-5 for computation of the location quotient.

Quebec as a base and also of each county using the region as a base.

It shows that agriculture and manufacturing are the only industries which are relatively more important for the St.Maurice region than for the province in 1961. In 1951, construction was included with the former two and, in 1941, agriculture, other primary, manufacturing and construction showed that characteristic.

Thus, in 1961, fewer of the St.Maurice region's industries are relatively more important than the province's in terms of employment.

The localization coefficient showed that agriculture was becoming more unevenly distributed throughout the St.Maurice region. Table C-14 reveals that agriculture was indeed becoming more important in certain counties[1] and less important in other counties[2].

The other primary industry, namely forestry in the St.Maurice region, where mining and fishing are insignificant, is the only other industry in which the coefficient of localization increased from 1941 to 1961.

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1) Berthier, Maskinongé and Nicolet.

2) Champlain and St.Maurice.

The localization coefficient showed that the trade and finance industry was more evenly distributed in 1961 than in 1941. Accordingly, the location quotients have increased slightly for Berthier, Maskinongé and Nicolet, and decreased slightly for St.Maurice.

The small importance of this industry, relative to the province is explained by the fact that there does not exist any strong financial or trade center in the region mainly as a result of the relative proximity of the Montreal region.

The fact that this industry is becoming more evenly distributed also means that the existing centers have a declining influence on the rest of the region.

c) Employment Shifts Among Industries.

The employment shifts between 1941, 1951 and 1961 show the changing relative importance of each county as to employment in the various industries.

The only industries that are used here are agriculture, other primary and trade and finance. The latter, as seen earlier, are the only

ones which can be compared in the period under study.

Labour force employed in all industries of the St.Maurice region grew 21.6% from 70,601 in 1941 to 85,856 in 1951 and 8.3% from 85,856 in 1951 to 93,003 in 1961.

This compared with 19.4% and 20.1% in the province of Quebec for the same period. As in the case of population, not all counties achieved the same rate of growth in total employment.

Table C-15 in Appendix C, shows the employment shifts for selected industries and for the total labour force. In the 1941 to 1951 period, the counties of Berthier, Maskinongé and Nicolet had fewer members of the labour force than if they had grown at the same rate as the St.Maurice region. Champlain and St.Maurice had more than their share of the "expected" addition of labour force. In the 1951-61 period, Champlain accounts for the total positive shift.

An examination of a few selected industries throws more light on the latter observations. In the 1941 to 1951 period, all counties except Nicolet have negative shifts for agriculture. For the "other primary industries" sector, Berthier and Nicolet show comparative losses as Maskinongé, Champlain and St.Maurice make positive relative gains.

High positive shifts are noticed for trade and finance sectors in the industrialized counties of Champlain and St.Maurice revealing that between 1941 and 1951, the

service industry has developed more rapidly in the latter counties than in the region as a whole.

A look at the latter sector for the 1951-1961 period reveals that it is gaining importance relative to the other industries in most counties except for St.Maurice which accounts for the total downward shift in the trade and finance sector. This could mean that in the 1951 to 1961 decade, Trois-Rivières lost its predominant position as a trading, administrative and business center of the region. Again, as no other city seems to have taken its place, some other agglomeration outside the region is playing that role increasingly.

In the 1951-61 period, the agricultural sector follows a similar pattern as in the previous period. The other primary sector shows negative relative losses for Berthier, Maskinongé and Nicolet and positive shift of 100% for Champlain. The forestry sector is rapidly declining in importance in terms of the volume of employment as compared with the service sector. The county of Nicolet showed the largest comparative gains in agriculture in both periods and at the same time showed the greatest comparative losses in total labour force.

In brief, the agriculture and forestry sectors are both declining in importance in most counties except Nicolet but not as much as in the province as a whole. The service

sector, though being smaller than in the province, is growing at a more rapid rate.

Three general trends emerge from the previous discussion: 1) the widening gap in the rate of increase of population between the region and the province due mainly to the outmigration of the active element of the population, 2) the continuing concentration of existing population and manufacturing activities in a few cities located mainly in the counties of Champlain and St.Maurice, and, 3) the high proportion of active population employed in manufacturing industries in relation to the province.

CHAPTER IV

THE ST.MAURICE ECONOMY - GROWTH OF INCOME.

Changes in population and labour force characteristics within a specific region will ultimately affect and be affected by changes in levels of income.

The counties of the St.Maurice region are now examined for changes in levels of income within the region itself and in relation to those of the province as a whole.

Per capita personal income is probably the most frequently used measure of the general welfare of a nation. But statistical and conceptual difficulties inherent in the estimation of this statistic limit its use particularly at the sub-regional level as is the case in this thesis.

Thus, income is analysed using the Taxation Statistics published each year by the Federal Department of National Revenue, and the distribution of earnings by wage-earners as compiled in Census data.

These measurements are used because: 1) they are available on a county basis, 2) they exist for a

period of at least two decades. Among the difficulties encountered are the differences of the cost of living between the urban and rural counties of the St.Maurice region and between the latter region and the rest of the province when such a comparison is made. Although not negligible, this factor was assumed constant for the purpose of comparison.

The income and earning figures studied are "nominal" and not "real" aggregates i.e. they do not reflect the buying power of the individuals.[1]

A Trends- Taxation Statistics

The Taxation Statistics present a useful breakdown at the regional and sub-regional level according to various sources of revenue for 66 counties and a few urban centers.

The limitations are that these statistics exist only since 1951, that some types of incomes are not considered taxable,[2] thus not recorded, and that finally, a certain number of low income earners are not required to file income tax returns and are thus omitted from the coverage of the taxation statistics.[3] However, this proportion is assumed

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1 See Appendix A-7 for further discussion on the matter.

2 Family allowances, capital gains, unemployment insurance payments, veterans' pensions for instance.

3 To which can be added a certain amount of income tax evasion.

to be of comparable size between counties of the St.Maurice region and of the rest of the province since the income tax Act uniformly applies throught the province.

Table C-16 shows incomes of the taxpayers of the counties in the St.Maurice region for the years 1951, 1956 and 1961. Only one county, St.Maurice, is above the provincial average in 1951. In 1956, St.Maurice is still the only county with an income above the average of the province. If considered with Champlain, both counties are above the regional average. In 1961, not one county in the region has an average income at least equal to the provincial average. Table 11 indicates that the gap between the income of taxpayers of the St.Maurice region and of the province as a whole has increased since 1951.

Table 11

Average Income of Taxpayers, St.Maurice Region and Province, 1951 and 1961.

	1951	1961
Region	3059	4006
Province	3176	4269
Region as percent of province	96.3	93.8

Source: Canada, Department of National Revenue, Taxation Statistics, 1953 and 1963.

B Trends - Census Data

The 1941, 1951 and 1961 censuses also provide some data regarding incomes of the people. The data of 1941 are not fully comparable with those of subsequent years but the differences are not too substantial to invalidate the analysis presented in this thesis for each period is studied separately, i.e. no comparisons in time are made.

Table 12 shows the percentages of wage-earners according to certain categories of incomes for 1941, 1951 and 1961. It reveals that, in general, in the three censuses considered the St.Maurice region has more wage-earners in low- income brackets than the province as a whole.

Champlain and St.Maurice have slightly more people in the high-earnings brackets than the province but the remaining counties are way below, which brings the regional average down.

Although there is an increasing similarity of income distribution within each group of counties[1], the two groups are moving further and further apart from each other as shown in Table 12. The difference is clearly seen in the $4,000 and over category where the Champlain-St.Maurice group has a

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1 They are: Berthier, Maskinongé and Nicolet on the one hand, and, Champlain and St.Maurice on the other.

Number of Wage-Earners, by Size of Earnings, St.Maurice Region by Counties and Province, 1941, 1951 and 1961.[1]

	Total Wage-Earners	-$ 950	$ 950 2949	$2950+	
1941					
Berthier	100%	88.4	11.4	0.2	
Maskinonge	100%	90.3	9.2	0.5	
Nicolet	100%	92.1	7.8	0.1	
Champlain	100%	71.0	28.4	0.6	
St.Maurice	100%	63.8	34.4	1.8	
Region	100%	71.6	27.3	1.1	
Province	100%	68.0	30.2	1.8	
		-$1000	$1000 2999	$3000 3999	$4000+
1951					
Berthier	100%	44.9	52.7	2.0	0.4
Maskinonge	100%	38.9	58.4	2.2	0.5
Nicolet	100%	66.4	32.6	0.7	0.3
Champlain	100%	32.2	57.7	8.1	2.0
St.Maurice	100%	31.6	56.8	8.2	3.4
Region	100%	35.7	55.2	6.8	2.3
Province	100%	27.9	60.7	7.4	4.0
1961					
Berthier	100%	25.2	55.3	10.8	8.7
Maskinonge	100%	25.1	58.1	10.0	6.8
Nicolet	100%	30.3	52.1	10.7	6.9
Champlain	100%	14.2	41.4	15.9	28.5
St.Maurice	100%	14.8	39.7	15.8	29.7
Region	100%	17.0	43.4	14.8	24.8
Province	100%	13.1	39.2	20.8	26.9

1 Computed from Table C-19 in Appendix C.

proportion of more than three times above the other group's in 1961. The influence of the urban industrial labour force is more heavily felt in the last two counties.

The level of income within an area is closely related or associated with its industrial structure, whether low-wage or high-wage industries predominate.

In the St.Maurice region, as in the province as a whole, earnings tend to vary inversely with the relative importance of agriculture and with the relative importance of agriculture-processing industries.

Incomes are however, positively associated with the relative importance of employment in the manufacturing industries.[1]

At no time during the three census years did the average earnings of total labour force of any county go above or near the provincial average.[2]

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1 There is a correlation coefficient of 0.97 in both 1941 and 1961 in the relative rank of each county in regard to the province, between average earnings of total labour force and the average earnings of manufacturing labour force which suggest that total average income is influenced mostly by the level of earnings in the manufacturing sector. (Based on Table C-20 using least-squares regression technique.)

2 Earnings of labour force employed in manufacturing industry was higher than the provincial average only in the St.Maurice county in all three years. See Table C-20 in Appendix C.

Being one of the most industrialized region of the province, the St.Maurice region would be expected to have at least as good salaries as the rest of the province, which is not the case according to Table C-20.[1]

Even the comparison of the province with each cities of 10,000 population and over of the region shows that in 1941 and 1961, only La Tuque and Shawinigan had an average earnings figure equal or above the provincial one.[2]

The region has not kept up with the province except for a few centers where a small number of highly specialized industries are established.

This explains partly the temptation of young and educated people to move to cities or regions offering higher salaries or simply to stay there after their education is completed. Two counties out of five have some potential for development but none of them seems to be generating enough impetus to bring the whole region back in line with the rest of the province.

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1 See Appendix A-8 for further evidence.

2 Average Earnings of Wage-Earners.

	La Tuque	Shawinigan	Province
1941	$ 673	$ 722	$ 673
1951	N/A	N/A	N/A
1961	$2,875	$2,702	$2,695

Source: Census of Canada, 1941 and 1961.

CHAPTER V

THE ST.MAURICE ECONOMY - GROWTH OF INDUSTRIES

A Input-oriented Industries

In this chapter, the changes of industrial structure of the St.Maurice region are examined. As was mentionned in chapter II, the St.Maurice region never knew any real agricultural era because of the poverty of soils, the lack of means of transportation and the not so favorable climate. The first attempts according to Raoul Blanchard[1] were only successful in lands along the St.Lawrence river.

Most farmers, sooner or later, would turn to the forests, first in the winter to supplement the subsistence gains on the farms and then becoming full-time lumbermen because most of them were highly dissatisfied with the disappointing crops. From the second-half of the XIXth Century on, lumber industry, initiated by Wright on the Ottawa, found its way in the St.Maurice valley because of the similar type of forest and the relative proximity of the St.Lawrence river.

There are few statistics on the importance of the lumber industry in the region at that time. However, most

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1 Blanchard, R., La Mauricie, Editions du Bien Public, Trois-Rivières, 1950, pp. 51 ff.

historians[1] are of the opinion that it was by far the major industry of the area.

Up until the beginning of the XXth Century, fur trade was important in terms of the value of products sold but employed an insignificant number of people. Such an economic structure based on a strictly foreign demand for only a small number of products is subject to wide fluctuations. The uncertainties were such that the region never knew economic progress before the early 1900's.

Lumber became rare in the region's forests, the demand for ship construction wood slowed down to nil when steel ships came into existence. Brick, iron, cement and plywood were becoming more popular for residential construction. The soft woods of the region, major elements in paper manufacture, were to become the essence of the economic development.

A large number of men were employed at the "cuts". Blanchard estimates some 20,000 men were working in the

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1 Blanchard, R., Le Centre du Canada Français, Librairie Beauchemin, Montréal, 1947.
Blanchard, R., La Mauricie, Editions du Bien Public, Trois-Rivières, 1950.
Dupin, P., Anciens Chantiers du St.Maurice, Editions du Bien Public, Trois-Rivières, 1953.
Boucher, T., Mauricie d'autrefois, Editions du Bien Public, Trois-Rivières, 1949.
Brouillette, B., "Le développement industriel de la vallée du Saint-Maurice", Pages trifluviennes, série A, No. 2, Trois-Rivières, 1932.
Dales, John,H., Hydroelectricity and Industrial Development - Quebec 1898-1940, Harvard University Press, Cambridge, 1957.

forests or in forest related industries at the beginning of the century. The small population of the St.Maurice valley could not supply all the available manpower necessary for the operations of the "chantiers". But a large immigration of people coming from the Gaspé region, Saguenay region and even the Eastern Townships took place and it caused the large increases of population in the counties of Champlain and St.Maurice in the early 1900's.[1]

The industrial era of the region actually starts at the turn of the XXth century with the opening of a pulp mill at Grand-Mère in 1890 and of an aluminum plant in Shawinigan in 1901, both of which depended heavily on hydroelectric power. With the increase of urban population, trade, commerce and service industries flourished but data are unable to indicate quantitatively their importance in the regional economy in the early 1900's. What data are available[2] indicate that few consumer goods (except agricultural products) were produced locally. The region was thus largely dependent upon other areas for its supply of consumer goods and its own production of raw materials was almost exclusively exported to other countries. This characteristic

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1 See Table C-1 in Appendix C, and, Blanchard, R., La Mauricie, p.70.

2 Census of Canada, 1901 and 1911.

is still present in the region.[1]

Table 13 indicates that in 1961 the region had a higher proportion of labour force working in primary activities than the province as a whole.

However, the portion of people employed in primary industries has decreased by more than half in the St.Maurice region between 1941 and 1961. Table C-13 shows that most of the decrease of employment in primary industries is due to a decline in agricultural employment.[2]

Secondary and tertiary employment increased by respectively 50 percent and 25 percent between 1941 and 1961 although the rate of increase is lower between 1951 and 1961.

The location quotient technique[3] is used to evaluate the respective importance of each industrial sector in the counties included in the St.Maurice region. Table 13 reveals

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1 In 1961, 35.2% of the region's production was exported to other regions of Québec; 26.3% to the other provinces and 38.5% to foreign countries. Out of total exports valued at $1,093 million, $428 million (40%) was paper products, and $323 million (30%) aluminum ingots.
Source: Ministère de l'Industrie et du Commerce, "Destinations des expéditions des produits manufacturés au Québec, 1961", Statistique, 2è trimestre, Québec, 1965.

2 Mining and fisheries employment being insignificant in the region.

3 See Appendix A-5 for computation of quotient.

Table 13

Location Quotients of Labour Force, St.Maurice Region by Counties, 1941, 1951 and 1961.[1]

	Percent		
	Primary	Secondary	Tertiary
1941			
Berthier	1.6	0.5	0.8
Maskinongé	1.5	0.8	0.7
Nicolet	1.3	0.4	0.7
Champlain	0.9	1.1	1.0
St.Maurice	0.4	1.4	1.3
Region/Province	1.4	1.0	0.8
1951			
Berthier	1.6	0.9	0.8
Maskinongé	1.9	0.9	0.7
Nicolet	2.3	0.4	0.8
Champlain	0.9	1.1	0.9
St.Maurice	0.3	1.1	1.2
Region/Province	1.2	1.1	0.8
1961			
Berthier	1.7	0.9	0.9
Maskinongé	1.9	0.9	0.8
Nicolet	2.5	0.5	0.9
Champlain	1.0	1.2	0.9
St.Maurice	0.3	1.1	1.1
Region/Province	1.4	1.2	0.8

[1] Based on Tables C-13 and C-21 in Appendix C.

that Berthier, Maskinongé and to a certain extent Champlain have more or less the same relative share of employment in the primary sector as the region for the three years. St.Maurice is declining slightly and Nicolet is definitely increasing.

Nicolet is becoming "the" agricultural area of the region partly the result of an increase in the size of its labour force working in agriculture, and partly the result of an overall decline of the agricultural labour force in the other counties.

St.Maurice shows a declining importance of secondary and tertiary employment in both 1951 and 1961. Its manufacturing and service sectors are not developing at a rate comparable to the less industrialized counties of the region.

This slowdown of activity can be explained by reference to the role of energy-oriented industries upon the economic development of the region.

B Energy-oriented Industries

At first used entirely by local power hungry industries,[1] hydro electric power was later sold to the Montreal and Eastern Townships regions and was the decisive factor in the

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1 Blanchard, R., Op. Cit., pp. 91-94.

establishment of chemical and related industries in the St.Maurice region.

When the new manufacturing processes using electrolysis were applied to such operations as aluminum refining and reduction of calcium carbide, the presence of hydroelectric power became a strong locational factor. It is estimated that between 1920 and 1940, some 75% of all electricity produced was used in the St.Maurice region itself.[1]

At this early stage the locational influence of the new source of energy on the manufacturing industries was of great importance. Two large industries were established basically because of the presence of electricity: aluminum refineries[2] and chemical industries. The pulp and paper industry developed because hydroelectric power and forest resources were found together in the St.Maurice valley.

The question arises: given the technological improvements in the transportation of electric power over long distance, why did most companies not relocate to more accessible places sooner?

> "Ainsi les premières usines sont restées fixées au voisinage des centrales, bien que les conditions de leur localisation fussent périmées".[3]

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1 Blanchard, R., Op. Cit., p.96.

2 Where electricity acts both as processing agent and source of energy.

3 Blanchard, R., Op. Cit., p.100.

World conflicts and in particular World War II contributed to unbalance the natural localization forces at work. By placing a heavy demand on various fuels, alloys, ammunitions and chemical products, at a time when the locational advantages of the region were declining, it artificially kept a strong demand on these and related products manufactured in the St.Maurice region.

The declining importance of manufacturing industries in the region since 1951 is partly the effect of the slowdown in economic activity after the last war, and partly the effect of the lack of further diversification of industries away from paper and textile manufacturing. What were the developments in the tertiary sector?

C Market-oriented Industries

The tertiary sector has often been regarded as a key element in economic development and material progress. As technical and organizational advances in the primary and secondary sectors augment labour productivity, a growing proportion of the labour force is freed from resource extraction and manufactures to engage in so-called services to business and consumers, transportation, communications, trade, finance, recreation, professions, etc...[1]

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1 Perloff, Harvey, Op. Cit., p. 51.

Little is known about service and related industries in the early 1900's. Looking at the relatively early stage of development of the region as a whole, it appears that the tertiary sector was small in absolute and relative terms and largely dependent upon the operations of a few major paper companies.[1]

Specific data are available commencing with the 1941 census. Table C-21 shows the proportion of the tertiary labour force in relation to the total labour force for each county of the region. It reveals that since 1941, the region has definitely moved toward a higher share of its employment in service or market-oriented industries, although being lower than the province in all three census years.

The counties of Berthier, Maskinongé and Nicolet increased their share of employment in the tertiary sector at a more rapid rate than either Champlain or St.Maurice. The decreasing location quotients of Table 13 for the latter counties between 1941 and 1961 confirm the former assertion.

As a whole, the St.Maurice region has comparatively more labour force employed in the primary and secondary sectors than the province and comparatively less in the tertiary sector.[2] The relatively slow growth of employment in

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1 Blanchard, Raoul, Op. Cit., p. 103.

2 See Chapter III, Section C.

the first two sectors reveals the lack of a strong and dynamic industrial structure in the region especially in the "industrial" counties:

> "Selon les critères généralement reconnus de croissance économique, la région de la mauricie dans son ensemble, pourrait se situer au premier stage d'industrialisation." [1]

The implications of the latter discussion are further examined in chapter VI.

Throughout this thesis, industrial location characteristics have been established using the labour-force classifications and various quotients and coefficients using population and employment data. Although the latter do not reflect all the factors determining the comparative economic importance of industries, it provides a uniform basis for measuring and comparing the distribution of all types of economic activities.

Location quotients and various other coefficients based on value added of production or on salaries and wages paid out to each industrial sector would present a more complete and more meaningful picture of the St.Maurice region. As more refined statistics are developed by the Provincial and Federal Governments, it will become possible to further

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1 Hébert, Germaine, Région économique No.4, Bureau de recherches économiques, Ministère de l'Industrie et du Commerce, Québec, 1961, p. 1.

expand and complete the present study.[1]

D Growth of Manufacturing Industries

As noted previously, the manufacturing sector was the prime motor of development in the St.Maurice region. Manufacturing statistics are available in more detailed form than data for either primary or tertiary industries. Table C-22 reveals that the number of establishments has been increasing rapidly between 1901 and 1911 and between 1941 and 1951 in the region. For the first time of the entire period, it decreased between 1951 and 1961. All counties accounted for the 1901-1911 increase which corresponds to the first wave of industrialization in the region. However, only Champlain and St.Maurice show significant increases between 1941 and 1951.

The smaller number of establishments in 1961 is explained 1) by the slackening of demand for war and war related products, 2) by the diminishing importance of hydroelectric power as a location factor, 3) by the increased productivity of the remaining establishments[2], and 4) by the

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1 See Appendix B.

2 Between 1951 and 1961, the number of employees in manufacturing industries increased by only 0.8 percent while the value of production in current dollars increased by 26 percent and 11 percent in constant dollars (1951=100). Source: Census of Canada, 1951 and 1961.

general slackening of economic activity at the provincial level.[1]

However, the level of activity is not uniform for all industries included in the manufacturing sector; flourishing industries may exist in certain regions while establishments of the latter are declining in other areas.

Perloff[2] presents the case of progressive establishments being part of generally declining industries. The national demand for the products of such an industry may be weak while the local demand is strong on a plant located in a certain area. This can be illustrated by reference to a study undertaken by the Dominion Bureau of Statistics[3] which provides data of the net relative change in manufacturing employment between 1949 and 1959 and between 1961 and 1967.

The main feature of this study is that it breaks down the "net relative change" of employment, into its "industry mix" and "regional share" components [4].

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1 The number of establishments of the province has also decreased between 1951 and 1961. (See Table C-22).

2 Perloff, Dunn, Lampard, Regions, Resources and Economic Growth, Cambridge University Press, London, 1960, pp. 104 ff.

3 Dominion Bureau of Statistics, Growth Patterns in Manufacturing Employment, by Counties, 1949-1959, 1961-1967, Ottawa, 1969.

4 See Appendix A-6 for computation and details.

The first component is the change attributable to the particular distribution of industries in the county, the second component is the residual.[1] Table 14 shows the results of that study in a summarized form.

Table 14

Components of Employment Change in Manufacturing Industries, St.Maurice Region by Counties for the Periods 1949-59, 1961-67.

	Net Relative Change Numerical	Net Relative Change Percent	Component of net relative change: Industry Mix Numerical	Component of net relative change: Regional Share Numerical	Component of net relative change: Regional Share Percent
1949-59					
Berthier	+53	+3.7	-122	+175	+12.1
Maskinongé	-61	-3.9	-248	+187	+12.0
Nicolet	-52	-6.0	+11	-63	-7.2
Champlain	-109	-1.6	-268	+177	+2.6
St.Maurice	+478	+4.0	+2,348	-1,871	-15.6
1961-67					
Berthier	+80	+5.4	-95	+175	+11.9
Maskinongé	+206	+12.7	-6	+212	+13.1
Nicolet	+15	+1.5	-85	+100	+10.3
Champlain	-899	-11.4	-837	-61	-0.7
St.Maurice	-2,096	-16.8	-807	-1,489	-10.9

Table 14 indicates that between 1949 and 1959 only Berthier and St.Maurice had a positive net relative change in manufacturing employment. The high growth of St.Maurice is explained by a large positive change in the industry-mix component.

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1 Changes in the residual stem from many causes including improved access to markets or to supply of skilled labour, declining access to raw materials etc .... .

In the subsequent period the industry-mix component is negative for all counties and is especially large for St.Maurice and Champlain. Pulp and paper, metal fabricating, chemical, textile, clothing and shoe industries, all of which are heavily represented in the region,[1] are the largest contributors to this loss.

Certain counties of the region are apparently specializing in those industries which grow at a lower rate than the average for all Canadian manufacturing industries.

Also, the largest employers in the St.Maurice region are branches of national or international firms.[2] Thus, the vitality, dynamism, stability or stagnation of certain industries do not depend primarily on local economic decisions but rather on the general conditions of an internationa.

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1 In 1961, the St.Maurice region accounted for 18% (largest producer of the province) of paper products, 22% of textile and 12% of chemical products manufactured in the province.
Source: Census of Manufactures, 1961.

2 e.g. Canadian International Paper, Consolidated-Bathurst Paper, Domtar, Alcan, Canadian Industries Limited, Gulf, Dupont, Reynolds Aluminum, Westinghouse.

market upon which an individual region has no influence whatsoever. The most important industries of the region do not have a typically regional character since these same industries have an equal and sometimes higher importance in other counties of the province.[1]

Table 16

Location Quotients[2] of Certain Industries, Counties of the St.Maurice Region and Other Selected Counties of the Province, 1959.

	Pulp and Paper	Dairy products	Textiles	Chemical	Apparel
Berthier	—	3.94	1.34	—	2.27
Maskinongé	0.39	2.47	3.81	—	1.37
Nicolet	—	6.06	0.74	—	1.37
Champlain	4.67	1.00	1.09	—	0.89
St.Maurice	3.29	0.82	1.34	3.84	0.41
Portneuf	6.40	1.20	—	—	—
Missiquoi	—	1.40	6.10	—	—
Verchères	—	3.20	—	11.80	—
Deux-montagnes	—	8.90	—	—	—
Artabaska	—	1.20	—	—	2.60

Table 16 indicates that for each important industry of the region, there exists another county in the province

1 Hébert, G., Op. Cit., p. 39.

2 See Appendix A-5 for computation of location quotient.

which has a higher location quotient than any of the St.Maurice counties.

To summarize: primary industry in the St.Maurice region consists mainly of agriculture. It is becoming more and more concentrated in Nicolet and it is constantly decreasing as to the number of people employed.

The region benefited greatly from the presence of hydroelectric power. It brought in highly-specialized manufacturing industries which set up the region for its "take-off".[1] At first, produced for local needs, hydroelectric power soon became an exportable commodity to other regions.

Manufacturing industries are among the largest employers of the region although no large fast growth industries have been established in the region for the last 20 years.[2] Pulp & paper, textile and chemical industries are declining or slow growth industries at the national level. Since the bulk of production is exported outside the region the latter industries are not sufficient to create and maintain the strong linkages necessary to assure a sustained industrial and economic growth in the St.Maurice region.

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1 See Chapter VI for further discussion on this subject.

2 Most recent big industrial plant (Electric bulbs-Westinghouse), was established in 1950.

Data on output-oriented industries are lacking. However, the location quotient of the tertiary sector for the region is smaller than 1 for the three census years examined, which suggests that the region is dependent upon other regions for its supply of various services. The wars and especially World War II with its heavy demand on chemical and related products helped to conceal the first signs of slow down in the region.

This decrease in growth of the leading industries of the region was more apparent after 1951.

Two decades later, the region is still expecting a revival. What specifically caused this sudden slow-down? What made the nearby Sorel region a more attractive place to locate in the past few years? What are the long- and short-term prospects of the region? These are some of the questions that are dealt with in Chapter VI.

CHAPTER VI

THE ST.MAURICE ECONOMY-OVERALL GROWTH

The purpose of this chapter is to set the economic development of the St.Maurice region into its historical perspective and to evaluate the importance of some of the most influencial factors at work since the early 1900's.

The present situation is reviewed and the prospects for the future are examined in the light of the latest developments on the economic, social and political scenes.

The progression of certain areas or sectors mixed with retardation of other sectors of economic activity that were noted in previous chapters make it possible in a rough sort of way to use a stages approach, similar to that used by Rostow[1], in assessing the economic development of the St. Maurice region.

The stages are: traditional society, preconditions for take-off, take-off, drive to maturity, high-mass consumption and search for quality.

This approach had been helpful in forming a theory of growth and a partial theory about modern history as a whole.[2]

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1 Rostow, W.W., The Stages of Economic Growth, Cambridge University Press, New-York, 1960, p. 59.

2 Rostow, W.W., ibid, p.1.

However, this classification does not apply fully to the history of development of the St.Maurice region, but it provides a starting point from which another series of stages can be developed.

For Canada as a whole, Rostow establishes the take-off period[1] between 1896 and 1914 although recognizing that the Quebec economy had only started to "be getting whole-heartedly under way"[2] in the 1950's.

Before 1900 the St.Maurice region was mostly at its natural state with large tracts of wooded land and a small population. This period cannot be identified as the traditional society defined by Rostow which supposes an already established population with traditions, devoted mostly to agriculture where the "level of productivity was limited by the inaccessibility of modern science".[3]

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1 The following conditions have to be met:
1) A rise in the rate of productive investment from, say, 5% or less to over 10% of national income.
2) The development of one or more substantial manufacturing sectors, with a high rate of growth.
3) The existence or quick emergence of a political, social and institutional framework which exploits the impulses to expansion in the modern sector. The latter implies a considerable capability to mobilize capital from domestic sources.

2 Rostow, W.W., Op. Cit., p. 19.

3 --------, Op. Cit., p. 5.

The stage of preconditions for take-off applies to a certain extent to the 1900-1931 period. Entrepreneurial initiative and capital were brought from outside the region and modern manufacturing enterprises developed in conjunction with a society still mainly characterized by traditional low-productivity methods, by an old social structure and by the regionally based political institutions.

In the St.Maurice region, it is tempting to define the period starting in 1900 as the take-off of economic activity. However, if take-off there is, it is only the rapid expansion of a few specific sectors, mainly pulp and paper and related products manufacturing. Also, the presence of social overhead capital was lacking in the region and was actually established only after a substantial amount of industrialization had been undertaken in the region.

Many authors including Blanchard[1] and Hirsch[2] believe that the take-off of the region and of the province can be situated around the first two decades of the present century. Growth at this point was much dependent on cost-supply environment and little on demand from local factors. The take-off had a high component of foreign capital and

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1 Blanchard, R., Op. Cit., pp. 79 ff.

2 Hirsch, R., Op. Cit., pp. 13 ff.

consisted mainly in the establishment of fast growth industries and hydro-electric installations.

No evaluation can be made as to the degree of expansion of internally generated capital and the innovation capacity of local entrepreneurs upon the subsequent development because of the lack of such data on a regional basis.

Defining drive to maturity and maturity in these circumstances becomes a difficult task because of a dichotomy of growth between cities and rural areas and between various sectors. "The technological definition of maturity must be an approximation, when applied to an economic entity"[1].

In the case of a region, a set of stages following the establishment of different types of industries, seems to be more appropriate to explain the degree of the contribution of region to national growth.

Between 1890 to 1914 the fastest growing industries of the province were railway material, cheese and butter cotton mills, pulp and paper and related products.[2] The last three industries were heavily represented in the

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1 Rostow, W.W., Op. Cit., p. 67.

2 Angers, F.A., Parenteau, R., Statistiques manufacturières du Québec, Institut d'économie appliquée, École des Hautes Études Commerciales, Montréal, 1966, pp. 63 and 161.

St.Maurice region[1] at that time.

This period is considered to be the first stage of development of the region i.e. being all part of the new industrial expansion that was taking place in many areas of the province.

It is characterized by the locational advantages attached to the availability of natural resources including hydroelectric power.

On this basis, the second stage of development would extend from 1918 to World war II.

War needs precipitated the large scale establishment of chemical and metal refining[2] industries in the region, among other things, to utilize comparatively low cost power

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1 According to the 1901 Census of manufactures, out of 352 manufacturing establishments, 237 were cheese and butter factories and 67 were devoted to forest products making up for 3,152 employees of a total of 4,657. In 1911, some 7,887 workers out of a total of 10,880 were employed in butter and cheese and forest products transformation in 434 plants out of a total of 540.

2 Two of the four "new industries" identified by Angers and Parenteau for that period. The confidentiality requirement of the Dominion Bureau of Statistics makes it impossible to ascertain the exact number of employees or the value of shipments in the region. Limited information however indicates that the newly established enterprises are employing a relatively large number of people and come close to pulp and paper and textile industries as to total employment and value of shipments.
Source: Ministère de l'Industrie et du Commerce, Inventaire Economique et Industriel, Trois-Rivières, Shawinigan, Cap de la Madeleine, Grand-Mère, Québec, 1949.

from recently installed hydro-electric facilities built on the St.Maurice river.

During that period, the latter industries were among the leading producers of the province,[1] and they accordingly brought an era of fast growth to the region.

It has been said that the almost exclusive raison d'être for Canada's large export-oriented electro-metallurgical and chemical industries were favourable hydroelectric power sources in close vicinity to tidewater locations.[2]

Whether of not the prime locational factor was nearby electric energy raises the question as to what region did benefit most from it? The surrounding cities or the already existing metropolitan areas of the province? This question is further discussed later in this chapter.

The third and last stage under consideration covers the period from 1945 to 1961.

At the provincial level the pulp and paper industry retains the first place in terms of employment and value of shipments (varying from 16.3% to 14.5% of total manufacturing

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1 Angers and Parenteau estimate that between 1927 and 1944, the relative value of paper production i.e. paper production as a percent of total manufacturing production went from 17.8% to 9.8% in the province of Quebec. Chemical and metal refining (aluminum) production increased from 0.3% and 1.7% to 9.3% and 8.3% respectively.
Source: Angers and Parenteau, Op. Cit., pp. 64-65.

2 Schramm, G., Op. Cit., pp. 210-230

production between 1945 and 1961 and from 16.9% to 16.1% of total manufacturing employment)[1].

> "L'industrie du bois, de la pâte et du papier autour de laquelle une partie de l'économie québécoise a commencé de graviter à partir de 1900, en demeure individuellement l'industrie la plus importante."[2]

The "new" industries[3] of that period are not heavily represented in the St.Maurice region. One factory of electrical parts was opened at Trois-Rivières in 1950, mainly the result of political pressure.[4]

No durable goods industries have as yet been established in the region except furniture and a few smallwares factories but their contribution to industrial employment is minor.

Cotton mills all over the province have felt the impact of international competition. The relative share of these industries to total production and employment decreased from 3.4% and 3.9% to respectively 2.5% and 2.6% between 1945 and 1961.[5]

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1 Census of Manufactures, 1945 to 1961.

2 Conseil d'orientation économique du Québec, "Document de base en vue de la planification", September 1962,p.23.

3 Petroleum refining, electrical appliances, synthetic textiles and aircraft construction.

4 Julien, P.A., Analyse des secteurs industriels de la Mauricie, Université du Québec, Trois-Rivières, 1970 p. 10.

5 Census of Manufactures, 1945 to 1961.

The St.Maurice region, which accounted for some 20% of total employment in textile industries was largely affected and part of the relative decrease in employment noted in Chapter V is due to the difficulties of the textile industry.

The characteristics of the period extending from 1945 to 1961 are the vast development of hydroelectric energy capacity and uses all accross Quebec; the continuing urbanization[1] of the province, the completion of the St.Lawrence Seaway and the developments of communications and air transport and the resulting increases in passengers transportation.

None of these appears to have affected significantly the location of industrial activity in the St.Maurice region. On the contrary, the most favored development took place in other parts of the province, mainly the Montreal area with its established market, and its administrative, financial, educational and commercial framework.

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1 In 1961, 74% of the province's population lived in urban centres compared with 63% in 1945. The St.Maurice region's urban proportion increased from 53% of total population in 1945 to 64% in 1961.

"L'augmentation constante de la part relative de la région de Montréal reflète la poursuite des mouvements de convergence et de concentration des populations situées dans les régions périphériques et excentriques vers la métropole. Il en résulte un déséquilibre dans le peuplement général de la province. On constate que ce déséquilibre va s'accentuant d'une période quinquennale à l'autre depuis 1951".[1]

To turn now to the most influencial factors that have affected the development of the St.Maurice region.

The factors are divided into endogenous and exogenous. This distinction is arbitrary because some of the endogenous factors like growth of population and migration are determined by exogenous factors and vice-versa. However, such an approach facilitates disaggregative analysis and thus adds to an understanding of the problems currently facing the region.

A Endogenous Factors

Population

The relatively high rate of population growth referred to in Chapter III was mainly the result of the large increases in the counties of Champlain and St.Maurice. Nicolet, Berthier and Maskinongé had stable or negative population growth between 1901 and 1931 and show only slight increases

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1 Ministère des Affaires Municipales, Choix de l'emplacement du nouvel aéroport international de Montréal, Québec, 1970, Annexe III, pp. 1 and 2.

in the following three decades. Overall growth of population in the region is smaller than that of the province as a whole and this is true for all the years under study despite the fact that the rate of urbanization was larger than the province for the first twenty years of the present century. The population of the region has also become less and less concentrated in the first and in the last three decades. On the one hand, the diminishing rates of concentration and urbanization of the last thirty years seem to indicate that the existing urban areas of the region have a declining influence on population movements within the region.

On the other hand, increasing coefficients of redistribution since 1931 show that the population of the region is becoming more mobile, with a good many people of working age moving out of the region.[1]

Data relative to the age structure suggest that the population between the ages of 20 and 29 constitutes an increasing proportion of the total population between 1901 and 1931 and a decreasing ratio thereafter to 1961. The latter reflects the relative aging of the regional population in the last three decades due partly to decreases in the birth

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1 Census data show that between 1941 and 1961 (only years available for such data), the region has a net out-migration of population. Only Champlain, between 1951 and 1961 shows a positive but small net migration.

rates, a phenomenon applicable to the province as a whole and to the migration of the most active element of the population to areas outside the St.Maurice region.

The proportion of population out of school having post-secondary education was much lower than for the province as a whole in the last three decades while the proportion of population with similar education, attending school, was only slightly lower than that of the province. This indicates that college or university graduates were and still are drawn into other regions upon completion of their degree.

> "On constate donc que l'érosion démographique affecte essentiellement la population d'âge actif. Certes, l'augmentation de la durée des études ou la volonté de spécialisation mobilise une certaine partie des éléments potentiels de la main-d'oeuvre, mais l'insuffisance de l'infrastructure universitaire et industrielle est responsable de cette forte régression de population".[1]

The latter comment describes the weak economic structure of the St.Maurice region. The least disturbance in the national or provincial economy is amplified and translated quickly into emigration, unemployment and low incomes. It is now an accepted fact that emigration is taking place in the St.Maurice region especially in the active element of population. Unemployment has been consistently above the

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1 Dobel, J.C., Main-d'oeuvre, Trois-Rivières, Office de planification du Québec, Québec, 1969, p.2.

provincial average for the last several years.[1]

As noted in Table C-20, the earnings of the labour force employed in all industries of the region are running consistently between 26% and 31% below those of the province as a whole for the years 1941, 1951 and 1961.

Resources Endowment and Utilization

Natural resources, i.e. forests and rivers were the prime locational factors of the St.Maurice region up to the 1950's. The development of the region follows essentially the path of exploitation of the former. Pulp and paper industry has been[2], and still is, the largest employer and producer of the province. This has benefited the region greatly although more diversification would have been preferable to minimize the effects of a slow-down in the demand for products of this industry.

The production of hydroelectric power is the second most important factor in the development of a wider industrial base in the region. Indeed, the establishment of a hydroelectric complex in the St.Maurice region can only be considered in conjunction with the large scale development

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1 Varying from 11% to 15% of total labour force compared with variations of 6% and 9% for the province as a whole, according to local Manpower Centres.

2 From the early 1920's.

of the pulp and paper, chemical and aluminum industries.

> "The hydroelectric firms have directly and actively encouraged the development of a wide range of manufacturing activities in their areas. It is through this latter process, the cultivation of markets, that the hydroelectric industry has made its most obvious contribution to the growth of manufacturing in Quebec."[1]

It could however be argued that the locational dependence of these industries on hydro sites has declined considerably with the improvements in the techniques of long-distance energy transportation. The present enlargement of chemical industries in the Sorel area, to the detriment of Shawinigan, is an example of a change in locational advantage away from natural resource endowment. The local market for the products of the chemical industry is too small to warrant any increase in the size or number of plants in the St.Maurice region.

The prospects for aluminum industry are not all bright. For Canada as a whole, any increase in primary aluminum smelting capacity is believed to be in the form of expansions of already existing plants since frequently the capital costs for plant expansions are much lower than the costs for the construction of a new smelter.[2]

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1 Dales, J.H., Op. Cit., p.156.

2 Kitimat's case as examined by a Financial Post analyst - Financial Post, February 20, 1966.

Most or probably all of the advantages that low-cost hydroelectric resources offered to export-oriented electro-process industries in the past by now have disappeared. Mr. Harper, President of ALCOA, was quoted as saying that "the aluminum industry has eliminated its dependence on hydroelectric power"[1].

Today, the locational decisions of most electro-process industries are no longer power- but market-oriented and, as a result, it is unlikely that new aluminum smelters will be built at potential Kitimat, Arvida or Shawinigan. They will be built in the Ohio Valley, in Great Britain, in Japan, and in other areas where a large existing manufacturing complex guarantees markets and provides the potential for the installation of the huge atomic or coal-fired powerplants that are needed to capture the economies of scale inherent in efficient thermal power generation.[2]

With the province-wide unionization of employees and the trend toward salary equalization, cheap labour is not any more a locational factor in the region. It follows that natural resources are still the only factor left for either paper, wood and furniture manufacturing or the promotion of tourist industry.

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1 "Aluminum Executive Shunning Hydro-electricity" in New-York Times, New-York, September 11, 1964.

2 Schramm, G., Op. Cit., p. 229.

Up until 1961, apparently little was done by local authorities to draw more industries in the region other than the formation of ad hoc organizations in special circumstances like the promotion of the bridge on the St.Lawrence river.

However, the recently established Conseil Economique de la Mauricie seems to direct its efforts toward completing the infrastructure of the region with an adequate network of highways and roads which, it is hoped could contribute to a decentralization of industry and lure some plants away from Montreal into the St.Maurice region.

> "D'ici 5 ans, il faut compléter le réseau routier régional, allant au parc national de la Mauricie jusqu'à Trois-Rivières et parachever l'autoroute 40 depuis le Cap-de-la-Madeleine jusqu'à Berthier."[1]

This subject is further expanded in the next section.

B Exogenous Factors

The St.Maurice region exports a relatively large portion of its production to other provinces and to foreign countries. The supply of capital and the demand for manufactured products are dependent upon the fluctuations of outside markets and the decisions of existing industries to alter the size of any new investment or their labour force are determined by considerations that may be contrary to the

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1 Conversation with M. Gérald Durocher, directeur général au Conseil économique régional, February 16, 1971.

self-determination of a region's economy.

The textile industry for instance, is facing stiff competition from producers in other countries and particularly from the synthetic textile manufacturers of Japan and other far-eastern countries. This has caused one large cotton plant at Grand-Mère (employing approximately 800 persons) to cease operations earlier this year in spite of the various pressures of local and regional authorities.

The figures published by the Canadian Pulp and Paper Association indicate that total newsprint production in Canada has actually decreased 4.4% in 1970. The plants were utilized only at 81% of their capacity compared with 91% in the previous years. Sales to overseas markets[1] and to United States[2] decreased 23.2% and 7.9% respectively. At the beginning of the sixties the Canadian paper manufacturers produced 72% of the United States total consumption compared with some 63% in 1970.

According to Mr. A.D. Hamilton,[3] president of Domtar Pulp and Paper Company, the United States market has been shrinking during the last 15 years for Canadian paper products.

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1 16% of total paper production.

2 57% of total paper production.

3 Press Conference on his returning from a tour of Common Market with other representatives of the Canadian Pulp and Paper Association, Montreal, March 30, 1971.

Domestic production increased substantially, with the U.S. becoming less dependent on Canada for newsprint.

Moreover, Great Britain's entry in the Common Market could mean closing or at least reducing the size of the European market for Canadian paper manufacturers. The advantage would shift largely to Scandinavian countries.

Pulp and paper mills have already started to slow down production in the St.Maurice region and the prospects for new investment or larger employment are dim for the next few years.

Aluminum Company of Canada has also recently announced its intention to reduce "substantially" the number of employees in their plants across the province including Shawinigan's.[1]

Little can be done at the regional level to counteract these trends except to try and improve the productivity of the industries concerned or to subsidize them until better economic conditions reappear.

It may however seem more appropriate to encourage the establishment of new, dynamic industries more apt to compete effectively in international markets. This would require the help of Provincial or Federal authorities and it could take the form of subsidies, tax incentives or the

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1 Note sent to Quebec Government, June 5, 1971.

establishment of transportation and communication facilities.

The first railroads in the St.Maurice region appeared only late in the XIXth Century. However their presence in the region has not been an important locational factor. They were built mainly to service the existing industries or the ones that were in the process of being established[1].

Soon the necessity of an adequate highway infrastructure became apparent. Road transport was offering an element of flexibility that the railways could not give especially for short and medium distances.

> "La période contemporaine peut-être définie comme étant celle des transports routiers. Ceux-ci, dès la fin de la guerre, ont indéniablement constitué un facteur nouveau aussi bien du point de vue du transport des personnes que celui du transport des marchandises".[2]

However, the highway network in the region has merely been constructed along lines already served by railways,[3] and little has been done to open up new areas to development and to encourage decentralization of industrial activity. Both railway lines and main highways run east-west, linking Montreal and Quebec city. Autoroutes to Ontario, to Sherbrooke, to the Laurentians and to Berthier all merge in

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1 Blanchard, R., Op. Cit., pp. 59 ff.

2 Hirsch, R., Op. Cit., p. 37.

3 The Trans-Canada Highway on the south-shore of the St.Lawrence and the Autoroute du Nord on the north shore.

Montreal but communications between the other important cities of the province are not so well established.

A North-South axis linking Lac St.Jean-Saguenay region with the Eastern Townships region via Trois-Rivières seems more in accordance with the development of these regions. In other words, some form of road infrastructure has to be established within the regions of the province before the latter can benefit fully from main links with the "metropole".

The Conseil Economique Régional de la Mauricie believes that the link to Montreal and the North-South highway are equally important to further development in the region. This point was stressed by a Trois-Rivières editorial writer:

> "La Mauricie avec son port, son aéroport, ses voies ferrées et ses institutions de haut-savoir, possède à peu près tous les éléments d'une infrastructure moderne et dynamique mais il lui manque l'élément essentiel, c'est à dire un réseau routier adéquat capable de lui ouvrir les portes sur les grands marchés!"[1]

Both Federal and Provincial Governments are presently working jointly at the promotion of special areas for the establishment of new industries. Most of the region's territory is described as "designated areas" and thus eligible for assistance of the provisions administered by the Federal Department of Regional Economic Expansion. The Becancour

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1 Saint-Amant, Sylvio, Editorial, Le Nouvelliste, March 22, 1971 issue.

site, opposite Trois-Rivières, the first and only Provincial Government-Owned Industrial Park, is a doubly-designated zone, entitling companies to substantial federal tax incentive. In addition, a bill now before the National Assembly would include the site into Quebec's "zone two" to make it eligible for 50 percent tax exemptions at the provincial level. As a sort of opening special, the first five companies to invest there are permitted to buy land at an exceptionally low price, three cents a square foot, providing they start building within six months of the date of purchase. Also the long-awaited bridge on the St.Lawrence is now completed, linking the two parts of the region.

These developments and policies are slowly beginning to pay off.

Glaverbel Glass Company and Falconbridge Nickel Mines Limited have invested $60 million and $115 million respectively for a total of some 600 new jobs for the region. Mr. Edouard Lagasse[1], General Manager of the Industrial Park has recently announced that a "few more industries of smaller importance have signed up" for a location in the above-mentioned Park. The linkage effects of the latter industries are expected to be significant and conducive to the establishment of more industries in a reasonably short period

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1 Conversation with Mr. E. Lagasse, April 3, 1971.

of time.

Earlier this year, the first nuclear energy plant of the province at Gentilly,[1] started its operation on an experimental basis. This represents an aggregate investment of over $125 million, supplied mainly by the Atomic Energy Control Commission of Canada and administered by Hydro-Québec.

The "Mauricie" National Park is considered to be the first step in the planning of an integrated tourist industry in the region, promoting that sector of the economy that has been underdeveloped until now.

The establishment of a campus of l'Université du Québec at Trois-Rivières is also significant in view of 1) keeping the student population in the region, 2) providing part-time university education to the working population, and, 3) co-operating with government and private industry for manpower development. The University has already unveiled construction projects totalling $25 million for the next five years.

The above developments are expected to set the pace of economic expansion in the St.Maurice region toward a greater industrial diversification.

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1 Situated in Northeast Nicolet on the St.Lawrence river.

CHAPTER VII

CONCLUSION.

The statistical analysis developed in Chapters III, IV and V and the historical background presented in Chapter VI have demonstrated that between 1901 and 1961, 1) the population of the St.Maurice region has increased at a lower rate than that of the province, 2) the region has always had a smaller proportion of population living in urban areas than the province even though, on three occasions, the rate of urbanization had been faster, 3) the region had and still has a lower percentage of people in the 25 to 64 age group than the province and generally speaking had less people with higher education than the province as a whole, 4) a relatively high proportion of the labour force was employed in manufacturing establishments, 5) agriculture did not develop much in the region except in the St.Lawrence Valley area, and, 6) the development of hydroelectric projects has been the determining factor in the rapid industrial expansion of the St.Maurice region.

But, it was also found that in the last two decades, 1) a large outmigratory movement took place, at both the urban and rural levels, in the active portion of the population, 2) the large urban areas of the region were

losing their predominant position as financial and trade centers, 3) the average earnings of the labour force were well below the provincial average even though salaries in a few specific industries are among the highest paid in the province and in Canada.

Basically the above-mentioned "symptoms" emerge from the fact that there are few "new" and rapid growth industries in the region, i.e. industries hiring a more educated and more specialized labour-force and having a large content of research work in the value added.

The region is a center of traditional activity. The industries are in the majority raw-material oriented and they are hiring a relatively large number of unskilled and semi-skilled workers.

The region's most important industries both as employers and producers are slow-growth (pulp and paper, chemical, aluminum) or even declining industries (textile) at the national level and can therefore not be expected to

become lead sectors in the economic development of the region.

Firstly, Canadian paper exports to both United States and Europe have declined substantially in relative terms over the last ten years. This is mainly the result of 1) increased capacity of United States paper plants; 2) predominance of Scandinavian countries to supply the Common Market and the rest of Europe; and 3) the austerity drive of American newspapers[1] following ban of tobacco advertising.

The province of Quebec accounts for approximately half of total canadian production. The St.Maurice region being the largest paper producer in the province is greatly affected by this declining trend.

Moreover, most plants in the region have 30 years or more of existence and cannot be expected to compete with the new installations of United States and Western Canada.

The solution seems to reside 1) in a special marketing effort using government facilities already established in foreigh countries, 2) in the modernization of Quebec paper industry with a certain amount of government intervention and control with as much effort at protecting existing jobs as at creating new ones, 3) in the reconversion of certain

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1 Largest buyers of Canadian newsprint ----Advertising space in newspapers and magazines went from over 300 million lines at the beginning of the sixties to less than 300 millions lines in 1970.
(Source: Canadian Association of Paper Manufacturers.)

newsprint plants for the production of other fine and special purposes papers and, 4) in the rational exploitation and reforestation of otherwise rapidly depleted supply of soft woods necessary for the production of paper.

However, the pulp and paper industry remains a stable but slow-growth industry. The average annual compound rate of growth of the industry's production for the period 1949-1969 has been below 4% while that of the economy as a whole was close to 5%.[1]

The last three years have seen a slackening of demand which depressed selling prices and profits and dampened the investment prospects in that industry.

Secondly, the annual rate of growth of aluminum industry's production and consumption has steadily decreased during the last decade, declining from about 10% for the period from 1920 to 1950 to about 8% for the past six years. While the reduced rate of 7% to 8% per year seems low, it is unlikely that the industry will return to the previous rate of 10%.[2] It is estimated that the current average growth rate of 7½% per annum for world production will continue during

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1 Manufacturing Statistics, various years.

2 ALCAN recently announced that no new jobs would be created in the coming five years. Capital investment would also be restricted, at least, insofar as the Canadian plants are concerned.

the next five years,[1] but, as mentioned in Chapter VI, the prospects for the establishment or expansion of aluminum refining plants in the St.Maurice region are relatively dim.

Thirdly, there are no indications that the textile industry is less productive in the St.Maurice than in other regions of the province or Canada. However, competition from far-east countries and even from eastern Europe has been felt for quite some time and this in spite of high import duties. The relative concentration of this industry in the St.Maurice region amplifies the problem.

Also, the St.Maurice region's textile industry is still almost entirely devoted to cotton production in the face of a growing demand for synthetic textile.

Hence, one of the key problems facing the St.Maurice region is the presence of too many slow-growth or declining industries which by and large are not competitive on national and international markets.

The economic future of the region does not rest 1) on the presence of electric energy plants; 2) on the exploitation and exportation of raw materials; and, 3) on the existence of a cheap labour force. Electricity can now be transported over long distances economically, with relatively little loss of power. The forests, with the new technology of

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1 Schreiber, G., Op. Cit., p. 223.

exploitation, can be depleted over a relatively short period of time, shorter than sheds can be replenished. Also, the growing concern about pollution of all kinds puts a stigma on any activity that is likely to alter or destroy the natural environment.[1] The province-wide trend toward salary equalization and minumum-wage laws enacted by Provincial and Federal Governments prevent low-salary accepting labour-force to be a positive factor influencing the establishment of industries.

The root of the problem in part is the lack of planning at the regional level. No overall policy has yet been designed by the Provincial Government concerning the development of Quebec regions along specific lines.

Up until around 1966, development matters have been left[2] to the initiative of local governments and this has accounted for much inefficiency and useless competition among various counties, cities and regions of the province.

Government action becomes desirable and necessary in order to delineate regions, define the potential growth poles, establish an order of priority among regions so designated and coordinate the efforts.

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1 Like large scale non-discriminatory "cuts" and the "floating" of logs down-rivers.

2 In 1966, the budget of the Department of Industry and Commerce accounted for .65% of total government expenditures of which .35% was devoted to the promotion of fishing industry.

Governments may adopt several attitudes in regard to regional development, ranging from non-interference to strict control.

A combination of non-intervention in strictly economic matters and regional development, and of active action in the social field, to alleviate those regional differences which are most noticeable would most likely be the overall policy of a liberal country.

However, this line of action is in principle unable to rejuvenate depressed regions[1] and it is bound to counteract the high productivity of dynamic regions by the need to constantly subsidize or assist, through the only medium of taxes, the low potential areas.

A policy of massive transfers of population from stagnant areas toward regions best suited for the setting up of new activities is another alternative. This would mean the enlargement of existing metropolitan areas[2] of the province which offer the largest combination of locational advantages for the dynamic secondary and tertiary industries.

Such a transfer of population can only be considered from a long-term point of view because of the understandable

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1 No positive action toward fostering development is taken directly by the government.

2 Mainly Metropolitan Montreal.

unwillingness of people, particularly the older group, to move away from their place of residence. A short-term application of such a policy may also be difficult to defend from a policital point of view.

Another way of looking at government action is to consider a decentralization of economic activity, based on the present population distribution. In other words, to provide jobs where people live rather than encourage people to go where jobs are to be found.

This could mean assisting the establishment or maintenance of non-competitive industries at least in the short-run. Also, too great a dispersion of economic activity, although favoring a certain interregional balance, may be done to the detriment of the overall growth thus preventing the attainment of economies of scale inherent to mass production.

However, in addition to disbursements for social transfers, public expenditures may thus become the starting point of an autonomous regional development providing that the industries concerned have some growth potential in the particular region where they are located.

A compromise solution could be a development policy to favor a limited number of areas having specific growth characteristics with a view to reestablish a certain interregional balance. The latter policy would prevent excessive

concentration in large cities and, at the same time, would stimulate the regrouping in promising secondary centres.

At the present time, the intentions of the Quebec Government seem to be the promotion of a certain decentralization of economic activity away from Montreal without hampering the development of the metropolis.

> "Montréal est pratiquement la seule région du Québec qui enregistre une augmentation démographique et dont le taux de chômage moyen est plus bas que la moyenne provinciale. Il est peu probable que le développement spontané puisse rétablir un certain équilibre. Il devient alors urgent tant au niveau politique qu'économique d'amorcer un développement économique qui vise à constituer volontairement un certain nombre de pôles de croissance mieux répartis sur le territoire. Il ne s'agit aucunement de geler le développement de Montréal; il s'agit de mieux agencer le développement de la métropole montréalaise dans une perspective québécoise".[1]

On the one hand, the attitude of the Provincial Government seems to be favorable to the promotion of a limited number of areas with special capabilities i.e. in the creation of growth poles east of Montreal in order to reduce the economic inequalities among regions of Quebec and thus to accelerate the development of the province as a whole.

On the other hand, the Higgins, Raynauld, Martin report[2] recently published by the Federal Department of Regional Economic Expansion, suggests that efforts at all

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1 Ministère des Affaires Municipales, Op. Cit., p. 14.

2 Higgins, B., Martin, F., Raynauld, A., Op. Cit., p. 152.

levels should be directed to the Montreal region, the only region of the province having the characteristics of a development pole.[1]

Before turning to the policy recommendations however, some points that have been developed in this thesis need to be reviewed.

It was found in Chapter II and also in Chapters VI and VII that the staple approach could best describe the process of economic development of the St.Maurice region up until very recently. However, in view of the increasing importance of markets in the development of modern industries and of the greater significance of large urban centers in the growth process, the "pôle de croissance" approach seems to be more appropriate when it comes to plan or predict the future course of the St.Maurice economy.

Further diversification and growth are indeed greatly enhanced by the presence of a large urban concentration because 1) development is only possible with the presence of strong poles, 2) planning as conceived by the present governments needs an array of well-structured

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1 Capable of generating forward and backward linkages, external economies and continuing innovation, Ibid., p.123.

regional capitals, and, 3) for "new" industries such as transport equipment, machinery, electronic parts and assembly, the most important locational factor is the presence in a region of an agglomeration of about 150,000 population.[1] By the services that it offers (university, specialized hospital), by its equipment (harbour, railways, airport, industrial park), by its supply of qualified labour force, the urban community appears to be the leading force in the future development of a region.

Trois-Rivières, together with Cap-de-la-Madeleine and the nearby agglomeration of Shawinigan-Grand-Mère, constitutes a highly industrialized and urbanized area. Geographically, the area lies in the axis of a triangle formed by the cities of Montreal, Quebec and Sherbrooke. It benefits from year-round harbour facilities. Both Canadian Railways have lines at various points of the region and Air Canada maintains a regular service to the well organized but almost unused Trois-Rivières Airport. An adequate road infrastructure is in the process of being completed in order to establish rapid transit facilities between Trois-Rivières and the other agglomerations of the province.

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1 Thompson, W., A Preface to Urban Economics, The John Hopkins Press, Baltimore, 1965, p.24.

In this regard, the following long-term policies could be considered as possible means to deal with the problems facing the St.Maurice region:

1. Establishment of a growth pole based on the development of existing major industries of the region, i.e. rationalization of activities by zone and by area. This could be achieved by the creation of an urban community including the cities of Trois-Rivières, Cap-de-la-Madeleine (and later Shawinigan and Grand-Mère) so that only one entity is responsible for the promotion of industrial activity in the region.[1] The rest of the territory would mainly be devoted to reforestation, to assure a constant supply of raw materials to paper mills, and, to tourism. Over 600 square miles of land are already the site of an "unorganized" Provincial Reserve and a 200 square miles National Park is in the process of being completed. The St.Maurice region is relatively close to the most densily populated areas of the province and will benefit from the "spillover" of the already saturated Laurentians in the immediate vicinity of Montreal.

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1 To put aside useless competition among cities and to create an atmosphere conducive to the establishment of dynamic industries.

2. Rational exploitation of forests under Government control to avoid the depletion of natural resources and keep the area attractive for further expansion of the tourist industry.
3. Closer cooperation between the Université du Québec à Trois-Rivières, various Cegeps[1], private industry, governments and other organizations for the development of qualified manpower.

Inadequacies of statistical evidence over time has placed limitations on the analysis presented in this thesis. However, it is hoped that this study can make a modest contribution to the understanding and interpretation of the process of economic development of the St.Maurice region and encourage further research in the field of regional economics in the Province of Quebec.

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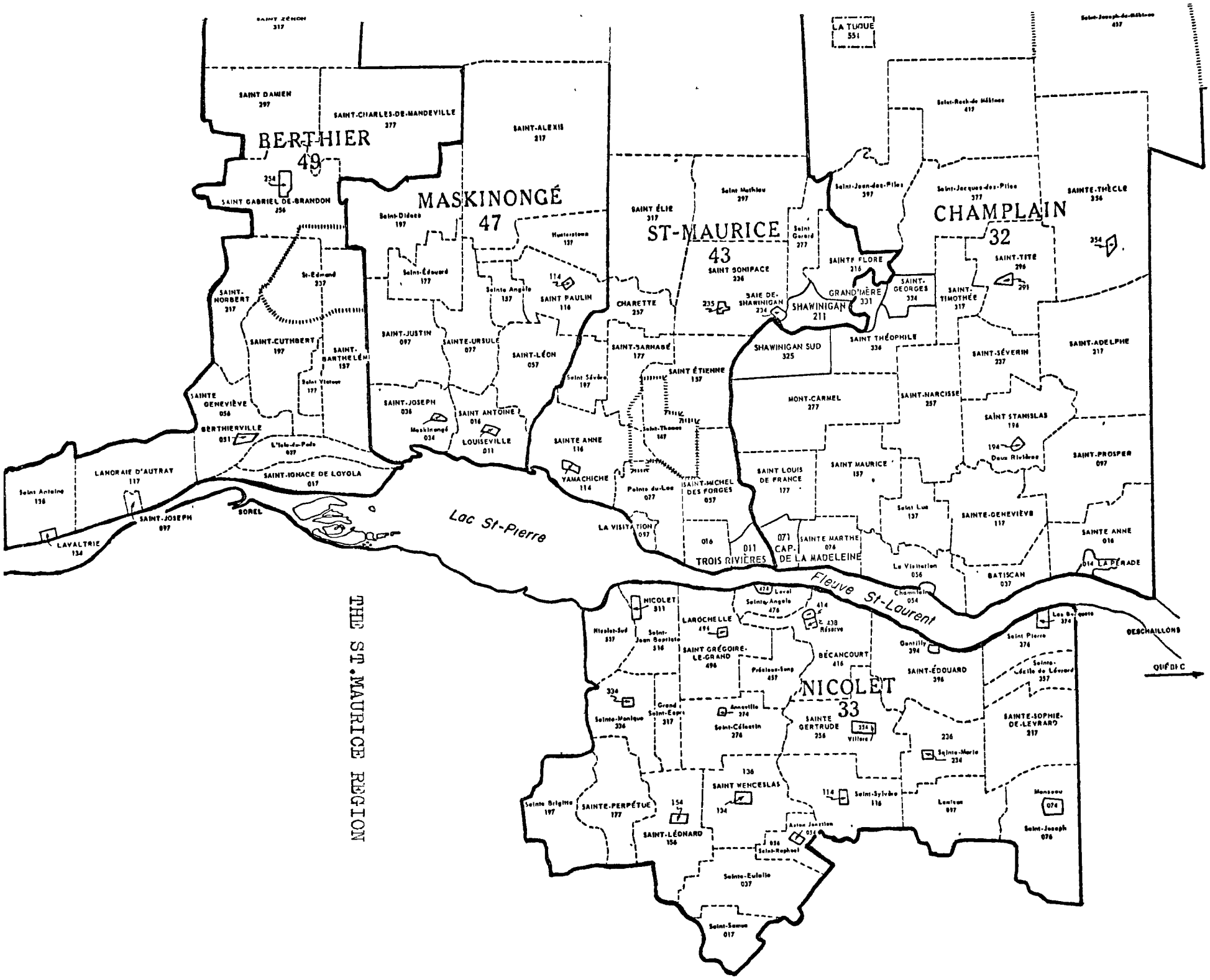
1 Equivalent to Ontario's Community Colleges.



THE ST.MAURICE REGION

APPENDIX A

The Coefficient of Concentration

The coefficient of concentration as developed by Hoover[1] is computed as follows:

Given year	Counties 1	2	3
Total area in county i (i=1...3)	50	20	30
Total population in county i (i=1...3)	40	10	50
Difference	+10	+10	-20
Coefficient of concentration	$\frac{20}{100}$ =	.2	

The first row gives the percentage distribution of area among the counties of a given region and the second row gives the percentage distribution of the population among them. The value of the coefficient is obtained by summing up the positive or negative differences and expressing the sum as a percentage. In this thesis, the above computation is done for seven points in time (census years) in order to find out whether the distribution of population has become more or less equal in the St.Maurice region.

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1 Hoover, E.M., Op. Cit., pp. 963-968.

The Coefficient of Redistribution

The coefficient of redistribution, following the method developed by Florence[1], is computed as follows:

	Counties		
	1	2	3
Total population of county i(i=1...3) in year X	20	15	65
Total population of county i(i=1...3) in year X + 1	25	12	63
Difference	-5	+3	+2
Coefficient of Redistribution	$\frac{5}{100} = .05$		

The first row gives the percentage distribution of population among the counties of a given region in year X and the second row gives the percentage distribution of population among the same counties in year X + 1. The sum of the positive or negative differences is expressed as a percentage.

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1 Florence, Fritz, Gilles, Op. Cit., Ch. 5.

The Shift Technique

This technique combines the absolute and relative dimensions of population growth. It is based on a method developed by Perloff.[1]

For example, in measuring the population changes in the counties of the St.Maurice region between 1901 to 1961; the percentage increase in regional population for these years is applied to each county's population to give the "expected change" by 1961 if population had increased uniformly through the counties. This expected population change is then compared with the actual change in each county and any difference constitutes a "net upward shift" or a "net downward shift".

Each individual shift can then be expressed as a percentage of the total upward or downward movement.

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1 Perloff, Dunn, Lampard, Op. Cit., pp. 63-74.

	Region	Counties	
		A	B
Population 1901	100,000	20,000	30,000
Population 1961	300,000	30,000	110,000
Actual change	+200,000	+10,000	+80,000
Expected change: the percentage increase in regional population applied to counties		+40,000	+60,000
$\frac{200,000}{100,000} = 200\%$			
Upward or Downward Net Shift among counties	+40,000	-30,000	+20,000
County's percentage of total upward or downward shift.		-75%	+50%

In this example, county A accounts for 75% of the aggregate decline in all declining counties and county B accounts for 50% of the aggregate increase in all the increasing counties.

The Coefficient of Localization[1]

The coefficient of localization is of the same type as the coefficient of redistribution described in Appendix A-2. The two coefficients compare percentage distributions but the latter is a comparison in time and the former is a comparison of magnitudes.

Specifically, it is a measure of relative concentration of a given industry in a county or region compared with some magnitude such as population, employment or income. It is computed as follows:

	Counties		
	A	B	C
1. Per cent of employment of industry i.	25	35	40
2. Per cent of total industrial employment.	15	60	25
Difference	+10	-25	+15
Coefficient of localization.	$\frac{+25}{100} = .25$		

Each county's percentage share of total employment in the given industry is subtracted from its percentage share of total industrial employment and the positive or negative differences are expressed as a percentage.

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1 Isard, W., Methods of Regional Analysis, the M.I.T. Press, New-York, 1960, pp. 251-253.

The limits to the value of the coefficient are 0 and 1. If the given industry is distributed exactly the same as is the base magnitude (industrial employment in each county), the value will be 0. If the entire industry is concentrated in one county, the value will approach unity.

The Location Quotient

The location quotient used here is the one developed by the U.S. National Resources Planning Board.[1] For any given industrial activity, it presents for each county a coefficient which is computed by dividing the county's share of total wage-earners for this given industry by the region's share of total wage-earners for the same industry.[2]

Employment is used here as an indication of the volume of economic activity because of the close tie between employment in various sectors and the corresponding state of the economy.

It is computed as follows:

Si : Manufacturing Employment in county i.

S : Total Employment in county i.

Ni : Manufacturing Employment in the St.Maurice region.

N : Total Employment in the St.Maurice region.

The location quotient for industry i in a given county is:

$$\frac{Si/S}{Ni/N}$$

The quotient reveals whether each county has more or less than its proportionate share of an activity. The

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1 U.S. National Resource Planning Board, Industrial Location and National Resources, U.S. Government Printing Office, Washington, D.C., 1943, pp. 107-119.

2 Isard, W., Op. Cit., p. 124.

industries whose location quotients exceeds unity can be considered as exports or export-oriented industries, and those whose location quotients are below unity, import or import-oriented industries.

The Net Relative Change Technique

In defining these concepts, it is useful to have reference to the following identity:

$$\sum_i \left(\left[E_{ij}^t - E_{ij}^1 \right] - \left[E_{ij}^1 \times r.. \right] \right) =$$

$$\sum_i \left[E_{ij}^1 \times (r_{i.} - r..) \right] + \sum_i \left[E_{ij}^1 \times (r_{ij} - r_{i.}) \right]$$

where

E_{ij}^1 : Employment in industry i in region j for the base year.

E_{ij}^t : Employment in industry i in region j for subsequent year t.

$r..$ = National growth rate for all industries to year t.

$$\frac{\sum_i \sum_j (E_{ij}^t - E^1{}_{ij})}{\sum_i \sum_j (E_{ij}^1)}$$

$r_{i.}$ = National growth rate for industry i to year t

$$\frac{\sum_j (E_{ij}^t - E_{ij}^1)}{\sum_j (E_{ij}^1)}$$

r_{ij} = Rate of growth of industry i in region j to year t

$$\frac{E_{ij}^t - E_{ij}^1}{E_{ij}^1}$$

The expression on the left hand side of the identity is the net relative change or the difference between the actual change in employment in the manufacturing industries for a particular region over the period and the national growth

or growth in employment that would have occured in the region if employment in its manufacturing industries had grown at the same rate as the average for all manufacturing industries in the nation as a whole.

The last concept is then broken down into two components. The first component is the effect of industry mix which is defined as the difference between the growth (or decline) of employment in the manufacturing industries in a region that would be expected if employment grew in each industry at the national rate for that industry, and the employment that would have existed if each had grown at the national average rate for all industries.

The second component is regional share which is defined as the difference between the actual change in employment in the manufacturing industries for a particular region and the change of employment that would have occured if each industry had grown (or declined) at the same rate as that industry did in the nation as a whole over the period.

Income versus Buying-Power

Financial Post[1] in Canada and Sales Management[2] in United States have developed a composite figure that takes into consideration not only the incomes but also the buying power and the cost of living of people for counties and urban areas of 10,000 and over.

The data for the period 1956 to 1969 indicate a trend similar to the one already found using the Census and Taxation statistics, although the former show much more difference between the incomes of urban and rural counties.

The disaggregation processes suggested by the Dominion Bureau of Statistics have been the basis of these calculations.

Also, in their well-known book[3], MM. Camu, Weeks and Sametz present an estimate of disposable income of individuals by counties again without much details: "Certain general relationships are utilized, adjusted for detailed knowledge of individual zone and crosschecked with the tremendous work done by the Financial Post in its 1962 Survey of Markets".

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1 Survey of Markets and Business Yearbook, McLean Hunter Co. Ltd., Toronto, Various years.

2 "Survey of Buying Power", The Marketing Magazine, New-York, Various years.

3 Camu, P., Weeks, E.P., Sametz, S.W., Op. Cit., p. 361.

Certainly more work in this direction is needed for the advancement of knowledge at this level of disaggregation.

Total and Per Capita Incomes

The results of a study made by the Research Bureau of the Ministère de l'Industrie et du Commerce of Québec[1] are summarized in the following table. Although the period covered is relatively short, it indicates that both population and income have increased less rapidly in the St.Maurice region than in the province as a whole between 1951 and 1961.

Total and Per Capita Income, St.Maurice Region and Province, 1951 and 1961.

		Total Personal Income (thousands)	Population (thousands)	Per Capita Income
Region	1951	$ 185,853	253.1[2]	$ 734
	1961	333,026	300.4	1,109
Province	1951	$3,534,786	4,055.7	$ 872
	1961	7,055,069	5,259.2	1,341

1 Using D.B.S. Censuses and the National Accounts as a basis for calculations.

2 Slightly different from Table C-1, because different base used.

APPENDIX B

Suggestions for Further Research

This thesis has examined only a small portion of the process of economic growth of the St.Maurice region. Listed below are possible avenues of research into the development pattern of the region.

1. Update of the present analysis to current year- particularly in view of the information that will become available with the 1971 Census.
2. Use of the new delineation of Administrative Region No. 4.[1] as more data become available from Provincial Government.
3. Detailed analysis into the locational factors important to the various industries and sectors.
4. Study of industrial growth based on output and value-added, rather than labour force classifications.
5. Estimation of internal and external migration at various periods and effects on the region.
6. Preparation of Input-Output Tables to show the interdependence of various industries within the region and with industries of the other regions of the province.
7. Role and effectiveness of government aid (past and present).
8. Application of Urban Growth Theories to the main cities of the region to determine what stage each city has attained and thus being able to propose more realistic expansion plans.

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1 Including Maskinongé, St.Maurice, Champlain on the one hand,and, Nicolet, Yamaska, Drummond and Arthabaska on the other.

9. More detailed analysis on the advantages and disadvantages of decentralization of industries in the province.
10. Examination of the region by function. (administrative, educational, touristic, transportation, industrial, etc..)
11. Study of the development of the region using Basic and Non-Basic classification rather than the more general classification of sectors of activity into primary, secondary and tertiary.
12. Examination of the general attitude of Quebec Government toward regional economic development.

APPENDIX C

Table C-1

Total Population, St.Maurice Region by Counties and Province, 1901-1961.

(In thousands)

	1901	1911	1921	1931	1941	1951	1961
Berthier	20.7	20.6	20.5	19.5	21.2	24.7	27.3
Maskinongé	15.1	15.8	16.3	16.0	18.2	19.5	21.3
Nicolet	27.2	30.1	29.7	28.7	30.1	30.3	30.8
Champlain	32.0	43.9	54.0	59.9	68.1	85.7	112.0
St.Maurice	29.3	35.0	50.8	69.1	80.3	93.9	109.9
Region	124.3	145.3	171.3	193.2	217.9	254.1	301.3
Province	1648.9	2005.8	2350.5	2874.7	3531.9	4055.7	5259.2

Source: Census of Canada, 1961.

Table C-2

Percent Increase of Population by Ten-Year Periods, St.Maurice Region by Counties and Province, 1901-1961.

	1891-1901	1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951-1961
Berthier	1.5	-0.5	-0.5	-4.9	8.9	16.4	10.6
Maskinongé	-12.6	4.6	3.0	-1.3	13.5	7.0	9.2
Nicolet	-5.3	10.5	-1.2	-3.4	4.9	0.8	1.6
Champlain	17.1	37.0	23.2	10.8	13.7	26.0	30.6
St.Maurice	27.3	19.6	45.1	35.9	16.3	16.8	17.1
Region	5.6	16.9	17.8	12.7	12.8	16.6	18.5
Province	10.8	21.6	17.7	21.8	15.9	21.7	29.7

Source: Census of Canada, 1951 and 1966.

Table C-3

Population and Area of Counties as a Percent of Region, 1901-1961.

		Berthier	Maskinongé	Nicolet	Champlain	St.Maurice
1901	Population	16.6	12.2	21.8	25.8	23.6
	Area	12.1	16.1	3.4	54.3	14.1
1911	Population	14.1	10.9	20.6	30.2	24.2
	Area	12.1	16.1	3.4	54.3	14.1
1921	Population	12.0	9.4	17.4	31.6	29.6
	Area	12.1	16.1	3.4	54.3	14.1
1931	Population	10.1	8.3	14.8	31.0	35.8
	Area	11.9	15.6	4.1	56.4	12.0
1941	Population	9.8	8.3	13.8	31.3	36.8
	Area	11.9	15.6	4.1	56.4	12.0
1951	Population	9.7	7.6	12.0	33.7	37.0
	Area	11.9	15.6	4.1	56.4	12.0
1961	Population	9.1	7.1	10.2	37.2	36.4
	Area	11.9	15.6	4.1	56.4	12.0

Source: Census of Canada, 1901 to 1961.

Table C-4

Rural and Urban Population, St.Maurice Region
by Counties and Province, 1901-1961.
(In Thousands)

		1901		1911		1921		1931		1941[1]		1951		1961	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Perc
Berthier	T	20.7		20.6		20.5		19.5		21.2		24.7		27.3	
	U	2.6	12.3	2.9	14.3	3.9	18.9	4.3	21.9	4.2	20.1	7.2	29.2	12.0	44
	R	18.1	87.7	17.7	85.7	16.6	81.1	15.2	78.1	17.0	79.9	17.5	70.8	15.3	55
Maskinonge	T	15.1		15.8		16.3		16.0		18.2		19.5		21.3	
	U	1.6	10.4	1.7	10.7	1.8	11.0	3.0	19.2	3.5	19.5	4.1	21.0	6.1	28.9
	R	13.5	89.6	14.1	89.3	14.5	89.0	13.0	80.8	14.7	80.5	15.4	79.0	15.2	71.1
Nicolet	T	27.2		30.1		29.7		28.7		30.1		30.3		30.8	
	U	2.8	10.3	4.6	15.4	5.5	18.4	6.8	23.9	3.8	12.5	4.1	13.5	4.4	14.5
	R	24.4	89.7	25.5	84.6	24.2	81.6	21.9	76.1	26.3	87.5	26.2	86.5	26.4	85.5
Champlain	T	32.0		43.9		54.0		59.9		68.1		85.7		112.0	
	U	3.0	9.3	9.2	20.9	26.6	49.3	30.7	51.2	34.2	50.2	53.7	62.7	78.0	69.6
	R	29.0	90.7	34.7	79.1	27.4	50.7	29.2	48.8	33.9	49.8	32.0	37.3	34.0	30.4
St.Maurice	T	29.3		35.0		50.9		69.1		80.4		93.9		109.9	
	U	12.4	42.4	19.9	56.9	35.8	70.2	53.5	77.4	63.6	79.1	75.3	80.2	92.3	83.9
	R	16.9	57.6	15.1	43.1	15.1	29.8	15.6	22.6	16.8	20.9	18.6	19.8	17.6	16.1
Region	T	124.3		145.3		171.3		193.2		217.9		254.1		301.3	
	U	22.3	18.0	38.3	26.4	73.4	42.9	98.3	50.9	109.3	50.2	144.5	56.8	192.8	64.0
	R	102.0	82.0	107.0	73.6	97.9	57.1	94.9	49.1	108.6	49.8	109.6	43.2	108.5	36.0
Province	T	1648.9		2005.8		2360.5		2874.7		3331.9		4055.7		5259.2	
	U	654.1	39.6	966.9	48.3	1322.4	56.0	1813.9	63.1	2057.0	61.7	2697.3	66.5	3906.4	74.2
	R	994.8	60.4	1038.9	51.7	1038.1	44.0	1060.8	36.9	1274.9	38.3	1358.4	33.5	1352.8	25.8

1 Definition of 1951.

Source: Census of Canada, 1951 and 1961.

Table C-5

Rate-of-Increase of Rural and Urban Population, St.Maurice Region by Counties and Province, 1901-1961.

		1901-1911	1911-1921	1921-1931	1931-1941	1941-1951	1951 1961
Berthier	U	14.6	31.4	10.6	-0.1	69.1	66.7
	R	-2.7	-5.8	-8.5	11.3	3.1	-12.7
Maskinongé	U	7.0	5.8	73.2	15.4	15.4	50.0
	R	4.3	2.7	-10.5	13.0	4.9	-1.6
Nicolet	U	66.3	17.9	25.3	-45.1	8.8	8.7
	R	4.1	-4.7	-10.0	20.5	-0.4	0.5
Champlain	U	210.3	190.8	15.2	11.1	57.3	45.0
	R	19.4	79.0	6.7	15.9	-5.7	6.3
St.Maurice	U	60.6	79.1	50.0	18.8	18.5	22.4
	R	-10.7	0.1	3.0	7.6	10.5	-4.9
Region	U	72.1	91.6	34.0	11.1	32.1	33.4
	R	4.8	-8.6	-3.1	14.5	1.0	-1.1
Province	U	47.8	36.7	37.1	13.4	31.1	44.8
	R	4.4	-0.1	2.2	20.1	6.5	-0.5

Source: Census of Canada, 1901 to 1961.

Table C-6

Age Groups, St.Maurice Region by Counties and Province, 1901, 1931 and 1961.

(In Thousands)

	1901	1931	1961
Berthier			
0-24	11.5	11.1	14.4
25-64	6.5	7.2	10.8
65 +	1.0	1.2	2.1
Maskinongé			
0-24	9.5	9.5	11.4
25-64	5.4	5.6	8.4
65 +	0.9	0.9	1.5
Nicolet			
0-24	15.9	16.4	16.4
25-64	9.3	12.4	11.7
65 +	1.4	2.0	2.8
Champlain			
0-24	21.7	36.7	61.6
25-64	12.1	20.9	44.8
65 +	1.3	2.3	5.6
St.Maurice			
0-24	15.6	40.8	57.3
25-64	9.5	25.9	46.5
65 +	1.1	2.4	6.1
Region			
0-24	74.2	114.5	161.2
25-64	42.8	72.0	122.0
65 +	5.7	8.9	18.1
Province			
0-24	959.4	1589.5	2700.5
25-64	610.2	1224.6	2252.5
65 +	78.4	133.2	306.3

Source: Census of Canada, 1901, 1931 and 1961.

Table C-7

Literacy of Population, St.Maurice Region by Counties and Province, 1901-1961.

		Population 5 years of age and over	Population that can read and write	
		Number (Thousands)	Number (Thousands)	Percent
Berthier	1901	16.0	12.2	76.2
	1911	16.8	14.5	86.2
	1921[1]	14.9	13.4	89.9
	1931	17.2	15.2	88.8
Maskinongé	1901	13.3	9.9	74.2
	1911	13.8	11.5	83.7
	1921[1]	11.6	10.3	89.1
	1931	13.9	12.5	89.7
Nicolet	1901	22.5	18.6	82.7
	1911	25.6	23.4	91.3
	1921[1]	21.6	20.3	93.8
	1931	25.0	22.8	91.3
Champlain	1901	29.3	21.3	72.5
	1911	35.9	31.2	86.9
	1921[1]	37.5	34.5	92.0
	1931	51.3	45.7	89.2
St.Maurice	1901	22.5	16.7	74.3
	1911	30.7	26.4	86.0
	1921[1]	36.8	33.9	92.1
	1931	59.1	53.4	90.4
Region	1901	103.5	78.6	75.9
	1911	122.8	107.0	87.1
	1921[1]	122.5	112.5	91.8
	1931	166.4	149.7	90.0
Province	1901	1411.3	1099.7	77.9
	1911	1712.2	1482.6	86.6
	1921[1]	1737.3	1616.2	93.0
	1931	2521.4	2275.3	90.2

Source: Census of Canada, 1901 to 1931.

1 Population 10 years of age and over.

Table C-8

Population Attending School, 5 Years of Age and Over, by Educational Attainment, St.Maurice Region by Counties and Province, 1941-1961.

(In Thousands)

	Total 5 years and over	Primary		Secondary		Post-secondary	
1941	Number	Number	Percent	Number	Percent	Number	Percent
Berthier	4.2						
Maskinongé	3.7						
Nicolet	6.7						
Champlain	15.5	N/A		N/A		N/A	
St.Maurice	17.9						
Region	47.9						
Province	650.2						
1951							
Berthier	4.5	4.1	89.9	0.4	8.7	0.07	1.4
Maskinongé	3.9	3.5	88.1	0.4	10.7	0.05	1.3
Nicolet	6.8	6.0	87.9	0.7	10.6	0.1	1.5
Champlain	17.8	15.3	86.2	2.1	11.8	0.4	2.1
St.Maurice	16.7	16.2	82.1	2.8	14.0	0.8	4.0
Region	52.7	45.0	85.3	6.4	12.1	1.4	2.6
Province	725.9	624.4	86.0	79.7	11.0	21.8	3.0
1961							
Berthier	7.0	5.5	78.9	1.4	19.8	0.1	1.3
Maskinongé	5.5	4.2	76.5	1.2	22.4	0.1	1.1
Nicolet	8.5	6.5	76.7	1.8	21.5	0.1	1.7
Champlain	30.5	22.3	73.2	7.6	25.0	0.5	1.7
St.Maurice	27.9	19.4	69.5	7.6	27.3	0.9	3.2
Region	79.3	57.9	73.0	19.7	24.9	1.7	2.1
Province	1260.0	947.3	75.2	279.1	22.2	33.6	2.6

Source: Census of Canada, 1941, 1951 and 1961.

Table C-9

Persons who Have Attended School, by Years of Schooling, St.Maurice Region by Counties and Province, 1941-1961.
(In Thousands)

1941	Total 5 years and over	No Schooling		Primary		Secondary		Post-Secondary	
		Numbers	Percent	Numbers[1]	Percent	Numbers[1]	Percent	Numbers[1]	Percent
Berthier	13.8	1.4	10.1	14.1	74.7	3.5	18.2	0.4	2.2
Maskinonge	11.4	1.0	8.6	11.6	72.3	3.2	19.7	0.4	2.3
Nicolet	20.8	1.5	7.2	19.0	71.9	5.4	20.5	0.8	2.8
Champlain	40.8	3.8	9.4	40.2	70.0	14.5	25.1	1.5	2.2
St.Maurice	49.4	4.1	8.3	44.4	62.6	19.6	27.7	3.1	4.4
Region	136.2	11.8	8.6	129.4	68.0	46.2	24.3	6.1	3.2
Province	2156.5	181.1	8.4	2004.3	67.7	673.3	22.7	109.7	3.8
1951									
Berthier	16.8	1.3	7.8	11.5	68.2	3.6	21.6	0.4	2.4
Maskinonge	13.0	1.0	7.9	8.2	63.4	3.3	25.7	0.4	2.9
Nicolet	19.6	1.4	7.0	11.9	61.0	5.5	28.2	0.7	3.8
Champlain	55.3	4.5	8.2	31.3	56.6	17.1	30.9	2.4	4.3
St.Maurice	61.9	4.3	7.0	32.3	52.1	21.2	34.3	4.1	6.6
Region	166.5	12.5	7.5	95.2	57.2	50.8	30.5	8.0	4.8
Province	2788.3	202.3	7.3	1637.3	58.8	793.6	28.5	155.0	5.5
1961									
Berthier	17.0	1.1	6.6	11.6	68.0	4.1	24.0	0.2	1.4
Maskinonge	13.2	0.9	7.1	8.7	65.9	3.3	25.1	0.2	1.8
Nicolet	18.7	1.2	6.7	12.1	64.9	4.8	25.9	0.5	2.5
Champlain	66.7	4.6	6.9	36.0	54.0	24.0	35.9	2.1	3.1
St.Maurice	68.7	4.0	5.8	34.4	50.1	27.2	39.6	3.1	4.4
Region	184.3	12.0	6.5	102.9	55.8	63.4	34.4	6.1	3.3
Province	3327.9	213.5	6.4	1715.7	51.6	1224.4	36.8	174.3	5.2

1 Adds to more than total of 5 years of age and over because it includes children at school.

Source: Census of Canada, 1941, 1951 and 1961.

Table C-10

Population in Larger Cities[3] as a Percent of Total Population of the St.Maurice Region, 1901-1961.[1]

(In Thousands)

	Population in larger cities.		Population in St.Maurice Region.
	Number	Percent	
1901	13.8[2]	11.1	124.3
1911	27.8[2]	19.1	145.3
1921	61.1	35.6	171.3
1931	82.5	42.7	193.2
1941	103.1	47.3	218.0
1951	125.3	49.2	254.1
1961	157.0	52.1	301.3

1 Computed from Tables C-11 and C-1.

2 Underestimated because of lack of data.

3 Cities of 1,000 population and over.

Table C-11

Manufacturing Statistics, St.Maurice Region
by Counties and Province, 1901-1961.

	Population (Thousands)	No.Establishments	No.Employees (Thousands)
Berthierville			
1901	N/A	N/A	N/A
1911	"	"	"
1921	2.2	10	0.1
1931	2.4	13	0.3
1941	2.6	9	0.4
1951	2.0	17	0.7
1961	3.7	16	0.6
Cap de la Madeleine			
1901	1.3[1]	none[1]	none[1]
1911	2.1	N/A	N/A
1921	6.7	N/A	N/A
1931	8.7	12	0.8
1941	12.0	18	1.2
1951	18.7	34	2.4
1961	26.9	44	2.7
Grand-Mère			
1901	2.5	3	1.0
1911	4.8	N/A	N/A
1921	7.6	34	2.7
1931	6.5	16	1.1
1941	8.6	19	1.9
1951	11.1	24	2.4
1961	15.8	30	2.1
Shawinigan			
1901	2.8	N/A	N/A
1911	4.3	2[1]	2.2[1]
1921	10.6	41	2.5
1931	15.3	23	3.1
1941	20.3	36	6.5
1951	26.9	47	5.7
1961	32.2	45	5.5
Trois-Rivières			
1901	10.0[1]	31	1.2
1911	13.7	N/A	N/A
1921	22.4	98	6.1
1931	34.5	59	5.3
1941	42.0	58	6.6
1951	46.1	90	7.7
1961	53.5	82	7.8

Table C-11 (continued)

	Population (Thousands)	No. Establishments	No. Employees (Thousands)
La Tuque			
1901	N/A	N/A	N/A
1911	2.9	11	N/A
1921	5.6	15	1188
1931	7.9	12	818
1941	7.9	14	875
1951	9.5	N/A	1400[1]
1961	13.0	43	2747
Nicolet			
1901	N/A	4	46
1911	N/A	N/A	N/A
1921	2.3	26	132
1931	2.9	N/A	N/A
1941	3.8	11	382
1951	4.1	16	344
1961	4.4	17	342
St.Tite			
1901	N/A	N/A	N/A
1911	N/A	N/A	N/A
1921	1.8	23	160
1931	2.0	N/A	N/A
1941	2.4	16	N/A
1951	3.9	26	384[1]
1961	3.3	24	N/A
Louiseville			
1901	N/A	N/A	N/A
1911	N/A	N/A	N/A
1921	1.8	N/A	N/A
1931	2.4	10	687
1941	3.5	N/A	N/A
1951	4.1	N/A	N/A
1961	4.1	20	1063

Source: Census of Canada, 1901 to 1961.

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1 Estimates from Raoul Blanchard c.f. Blanchard, Raoul, La Mauricie, Editions du Bien Public, Trois-Rivières, 1950.

Table C-12

Manufacturing Statistics, St.Maurice Region by Counties and Province, 1901-1961.

	BERTHIER		MASKINONGE		NICOLET		CHAMPLAIN		ST.MAURICE		PROVINCE	
	Establishments	Employees (Thousands)	Est.	Empl.	Est.	Empl.	Est.	Empl.	Est.	Empl.	Est. (000)	Empl.
1901	51	0.3	55	0.6	83	0.4	89	1.8	74	1.5	4.8	110.3
1911	80	0.6	80	0.6	139	0.4	137	2.4	104	6.8	6.6	N/A
1921	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	11.5	205.1
1931	80	0.5	74	1.1	138	0.4	135	3.0[1]	137	8.7[1]	7.4	204.8
1941	83	0.8	77	1.1	115	0.6	184	4.8	142	13.3	8.7	327.6
1951	116	1.5	74	1.7	119	0.8	236	7.5	193	13.6	11.9	417.2
1961	92	1.5	69	1.6	93	1.0	212	7.7	165	13.5	11.0	423.7

1 1936 figures.

Source: Census of Canada, 1901 to 1961.

Table C-13

Labour Force[1], by Industry Division, 1941, 1951 and 1961,
St.Maurice Region by Counties and Province.
(In Thousands)

	All Industries	Agriculture	Forestry, Fishing, Mines	Manufacturing	Construction	Transport & Communication	Trade	Finance	Service	Trade & Finance
941										
erthier	7.4	3.5	0.7	0.7	0.3	0.3	0.4	N/A	1.0	N/A
askinonge	6.3	2.7	0.7	1.0	0.2	0.2	0.3	"	0.8	"
icolet	10.0	5.9	0.2	0.9	0.3	0.3	0.4	"	1.6	"
hamplain	22.3	5.4	2.0	4.9	1.3	1.5	1.4	"	3.3	"
St.Maurice	24.6	3.1	0.4	7.2	2.0	1.7	2.4	"	5.7	"
Region	70.6	20.6	4.0	14.7	4.0	3.9	5.1	"	12.3	"
Province	1232.8	258.8	50.3	244.8	70.1	76.1	109.3	"	224.6	"
1951										
Berthier	8.3	2.4	0.4	2.6	0.4	0.5	0.5	0.1	1.2	0.6
Maskinonge	6.6	2.0	0.6	2.0	0.3	0.3	0.4	0.1	0.8	0.5
Nicolet	9.9	4.8	0.2	1.5	0.4	0.3	0.7	0.1	1.9	0.7
Champlain	28.6	3.9	1.8	11.2	2.7	2.2	2.3	0.3	3.8	2.6
St.Maurice	32.5	2.0	0.4	12.7	2.9	2.9	4.1	0.5	6.6	4.7
Region	85.9	15.1	3.4	30.0	6.8	6.1	8.1	1.0	14.4	9.1
Province	1471.8	194.8	70.2	453.1	102.7	119.6	173.1	38.9	291.8	212.0
1961										
Berthier	8.3	1.9	0.5	2.3	0.5	0.5	0.9	0.1	1.3	1.0
Maskinonge	6.4	1.5	0.5	1.7	0.3	0.3	0.7	0.1	1.1	0.7
Nicolet	10.0	3.9	0.1	1.4	0.5	0.5	1.0	0.1	2.1	1.0
Champlain	33.3	2.9	2.2	11.6	2.4	2.5	3.5	0.6	5.2	4.1
St.Maurice	35.0	1.5	0.4	12.1	2.3	2.9	5.0	0.8	7.5	5.9
Region	93.0	11.7	3.7	29.1	6.2	6.6	11.0	1.7	17.2	12.7
Province	1768.1	131.2	71.3	466.4	126.4	161.3	248.0	62.2	350.9	310.2

1 In 1941, the "gainfully occupied, 14 years old and over" definition is used and, in 1951 and 1961, the "labour force, 15 years old and over" definition is used.

Source: Census of Canada, 1941, 1951 and 1961.

Table C-13 (Continued)

Labour Force, by Industry Division, 1941, 1951 and 1961,
St.Maurice Region by Counties and Province.
(Each Sector as a Percent of all Industries)

	Agriculture	Forestry, Fishing, Mines	Manufacturing	Construction	Transport & Communication	Trade	Finance	Service	Trade Financ
1941									
Berthier	47.3	9.3	9.3	3.9	4.3	5.7	N/A	13.5	N/A
Maskinonge	43.3	10.4	16.4	3.1	3.0	5.2	"	12.3	"
Nicolet	58.6	2.4	8.5	2.9	2.5	4.2	"	15.9	"
Champlain	24.1	8.9	22.0	5.7	6.7	6.4	"	14.6	"
St.Maurice	12.5	1.7	29.2	8.0	6.8	9.9	"	23.1	"
Region	29.1	5.6	20.7	5.7	5.6	7.1	"	17.4	"
Province	21.0	4.1	19.8	5.6	6.1	8.8	"	18.2	"
1951									
Berthier	29.3	5.2	31.0	5.0	5.7	6.4	0.9	14.8	7.3
Maskinonge	29.7	9.5	29.8	5.2	4.1	6.4	0.7	12.3	7.1
Nicolet	48.2	1.7	14.6	4.1	2.9	6.6	0.7	19.6	7.3
Champlain	13.7	6.3	39.3	9.3	7.5	8.1	0.9	13.3	9.0
St.Maurice	6.1	1.2	39.1	9.0	8.8	12.7	1.6	20.2	14.3
Region	17.6	4.0	34.8	7.9	7.1	9.3	1.1	16.7	10.4
Province	13.2	4.7	30.7	7.0	8.1	11.7	2.6	19.8	14.3
1961									
Berthier	22.4	5.5	27.6	6.3	6.1	10.3	1.4	15.2	11.7
Maskinonge	23.5	7.0	26.7	5.3	4.3	10.3	1.1	16.7	11.4
Nicolet	39.1	1.1	13.6	5.3	4.5	9.1	1.0	21.4	10.1
Champlain	8.6	6.6	34.8	7.2	7.5	10.6	1.7	15.6	12.3
St.Maurice	4.3	1.2	34.5	6.7	8.1	14.3	2.3	21.3	16.6
Region	12.5	3.9	31.2	6.6	7.1	11.8	1.8	18.4	13.6
Province	7.4	4.0	26.3	7.1	9.1	14.0	3.5	19.8	17.5

Source: Census of Canada, 1941, 1951 and 1961.

Table C-14

Location Quotients of Labour Force, St.Maurice Region by Counties, 1941-1961.[1]

	Agriculture[2]	Forestry, Fishing, Mines[2]	Manufacturing	Construction	Transport & Communication	Trade & Finance[2]	Servi.
1941							
Berthier	1.62	1.66	0.45	0.68	0.76	0.80	0.7
Maskinonge	1.48	1.85	0.79	0.54	0.53	0.73	0.7
Nicolet	2.01	0.42	0.41	0.50	0.44	0.59	0.9
Champlain	0.82	1.58	1.06	1.00	1.19	0.90	0.84
St.Maurice	0.43	0.30	1.41	1.40	1.21	1.39	1.32
Region	1.38	1.36	1.04	1.01	0.91	0.80	0.95
1951							
Berthier	1.66	1.30	0.89	0.63	0.80	0.70	0.88
Maskinonge	1.68	2.37	0.85	0.65	0.57	0.68	0.73
Nicolet	2.73	0.42	0.42	0.51	0.40	0.70	1.17
Champlain	0.77	1.57	1.13	1.17	1.05	0.86	0.79
St.Maurice	0.34	0.30	1.12	1.14	1.24	1.37	1.21
Region	1.33	0.85	1.13	1.12	0.87	0.72	0.84
1961							
Berthier	1.79	1.41	0.88	0.95	0.86	0.86	0.82
Maskinonge	1.88	1.79	0.85	0.80	0.60	0.83	0.90
Nicolet	3.12	0.28	0.43	0.80	0.63	0.74	1.16
Champlain	0.68	1.69	1.11	1.09	1.05	0.90	0.84
St.Maurice	0.34	0.30	1.10	1.01	1.14	1.22	1.15
Region	1.68	0.97	1.18	0.92	0.78	0.77	0.92

1 Based on Table C-13.

2 Comparable figures for 1941, 1951 and 1961.

Table C-15

Employment Shifts Among Industries, St.Maurice Region by Counties, 1941-1961.[1]

	Berthier	Maskinongé	Nicolet	Champlain	St.Maurice
1941 - 1951					
All Industries					
Absolute	-744	-1089	-2293	+1485	+2641
%	-18.0	-26.4	-55.6	+36.0	+64.0
Agriculture					
Absolute	-150	-46	+453	-7	-250
%	-33.1	-10.2	+100	-1.5	-55.2
Other Primary					
Absolute	-161	+69	-33	+89	+36
%	-83.0	+35.6	-17.0	+45.9	+18.5
Trade & Finance					
Absolute	-139	-101	-22	+26	+236
%	-53.0	-38.5	-8.5	+9.9	+90.1
1951 - 1961					
All Industries					
Absolute	-706	-675	-742	+2336	-213
%	-30.2	-28.9	-31.8	+100.0	-9.1
Agriculture					
Absolute	-24	+6	+221	-173	-30
%	-10.5	+2.6	+97.4	-76.2	-13.3
Other Primary					
Absolute	-7	-219	-74	+300	-0-
%	-2.3	-73.0	-24.7	+100.0	-0-
Trade & Finance					
Absolute	+123	+91	+14	+377	-605
%	+20.3	+15.0	+2.3	+62.4	-100.0

1 Based on Table C-13.

Table C-16

Average Incomes of Taxpayers, St.Maurice Region by Counties, and Province, 1951, 1956 and 1961.

Counties	Amounts			Percentage Increase	
	1951	1956	1961	1951-1956	1956-1961
Berthier	$2538	$2656	$3273	4.6	23.2
Maskinongé	2317	2548	3302	9.9	29.6
Nicolet	2443	2761	2938	13.0	6.4
Champlain	2810	3551	3964	26.4	11.6
St.Maurice	3285	3644	4241	10.9	16.4
Region	3059	3497	4006	21.9	7.4
Province	3176	3606	4269	13.5	18.4

Source: Taxation Statistics, 1953, 1958 and 1963.

Table C-17

Distribution of Taxpayers' Incomes, St.Maurice Region by Counties, and Province, 1951, 1956 and 1961.[1]

	Percent of Province		
	1951	1956	1961
Berthier	79.9	73.7	76.7
Maskinongé	73.0	70.7	77.3
Nicolet	76.9	76.6	68.8
Champlain	88.5	98.5	92.9
St.Maurice	103.4	101.1	99.3
Region	96.3	97.0	93.8
Province	100.0	100.0	100.0

1 Based on Table C-16.

Average Incomes of Taxpayers, Cities of 5,000 Population and Over, St.Maurice Region, 1951, 1956 and 1961.

	Amounts			Percent Increase	
Cities	1951	1956	1961	1951-1956	1956-1961
Cap de la Madeleine	$2857	$3373	$3844	18.0	13.9
Grand-Mère	2831	N/A	N/A	—	—
La Tuque	3094	3382	N/A	9.3	—
Shawinigan	3432	3799	4544	10.7	19.6
Trois-Rivières	3184	3610	4197	13.4	16.3

Source: Taxation Statistics, 1953, 1958 and 1963.

Table C-19

Number of Wage-Earners, by Size of Earnings, St.Maurice Region by Counties, and Province, 1941, 1951 and 1961.

1941

	Total wage-earners	-$950	$950-$2,949	$2,950+
Berthier	3,195	2,824	363	8
Maskinongé	2,959	2,673	272	14
Nicolet	2,986	2,750	233	3
Champlain	14,737	10,451	4,178	108
St.Maurice	20,542	13,111	7,074	357
Region	44,419	31,809	12,120	490
Province	797,321	541,905	241,000	14,416

1951

		-$1,000	$1,000-$2,999	$3,000-$3,999	$4,000+
Berthier	4,734	2,124	2,493	91	26
Maskinongé	3,823	1,487	2,232	85	19
Nicolet	4,361	2,896	1,423	30	12
Champlain	21,819	7,031	12,537	1,759	442
St.Maurice	27,388	8,667	15,570	2,255	896
Region	62,125	22,205	34,305	4,220	1,395
Province	1,014,049	283,012	615,563	75,284	40,190

1961

Berthier	5,311	1,339	2,936	574	462
Maskinongé	3,963	995	2,303	396	269
Nicolet	4,400	1,334	2,292	471	303
Champlain	26,430	3,742	10,952	4,200	7,536
St.Maurice	28,615	4,234	11,348	4,530	8,503
Region	68,709	11,644	29,831	10,171	17,063
Province	1,403,491	183,393	549,900	291,817	378,381

Source: Census of Canada, 1941, 1951 and 1961.

Table C-20

Average Earnings in Manufacturing Industries and in All Industries in the St.Maurice Region as a Proportion of the Province.

	Percent	
	All Industries	Manufacturing
1941		
Berthier	60.0	56.7
Maskinongé	61.7	75.5
Nicolet	51.4	53.7
Champlain	78.3	94.3
St.Maurice	94.8	114.3
Region	69.2	79.0
Province	100.0	100.0
1951		
Berthier	51.8	62.4
Maskinongé	60.0	64.5
Nicolet	34.9	61.1
Champlain	89.8	95.1
St.Maurice	94.8	119.7
Region	66.3	80.6
Province	100.0	100.0
1961		
Berthier	64.8	61.7
Maskinongé	62.1	68.1
Nicolet	61.9	59.3
Champlain	88.5	96.9
St.Maurice	93.1	115.4
Region	74.1	80.3
Province	100.0	100.0

Source: Census of Canada, 1941, 1951 and 1961.

Table C-21

Employment in the Three Industrial Sectors, St.Maurice Region by Counties, and Province, 1941, 1951 and 1961.[1]

	Percent of County		
	Primary	Secondary	Tertiary
1941			
Berthier	56.7	9.4	33.9
Maskinongé	53.7	16.4	29.9
Nicolet	61.1	8.6	30.4
Champlain	33.1	22.0	44.9
St.Maurice	14.2	29.2	56.6
Region	34.8	20.8	44.4
Province	25.1	19.9	55.1
1951			
Berthier	34.6	31.1	34.3
Maskinongé	40.1	30.5	29.4
Nicolet	50.6	14.9	34.6
Champlain	20.3	39.8	39.9
St.Maurice	7.5	39.5	53.0
Region	21.6	34.9	43.5
Province	18.0	30.8	51.2
1961			
Berthier	27.9	27.6	44.5
Maskinongé	31.5	27.6	40.9
Nicolet	41.4	14.1	44.5
Champlain	15.8	36.0	48.3
St.Maurice	5.7	35.4	58.9
Region	16.5	31.2	52.3
Province	11.5	26.4	62.2

1 Computed from Table C-13.

Table C-22

Geographical Distribution of Manufacturing Industries, St.Maurice Region by Counties, and Province, 1901-1961.

	Number of Establishments	Salaries[1] ($millions)	Number of Employees (thousands)	Value of Production[1] ($millions)
Berthier				
1901	51	0.1	0.3	0.5
11	80	0.2	0.6	1.7
21	—[2]	—	—	—
31	80	0.3	0.5	1.3
41	83	0.5	0.8	3.4
51	116	2.3	1.5	11.2
61	92	3.5	1.5	16.2
Maskinongé				
1901	55	0.1	0.6	0.6
11	80	0.1	0.6	1.0
21	—	—	—	—
31	74	0.6	1.1	2.9
41	77	1.0	1.1	5.7
51	74	2.6	1.7	13.0
61	69	4.3	1.6	18.0
Nicolet				
1901	83	0.1	0.4	0.6
11	139	0.1	0.4	1.4
21	—	—	—	—
31	138	0.2	0.4	1.3
41	115	0.4	0.6	3.1
51	119	1.3	0.8	10.5
61	93	2.2	1.0	14.5
Champlain				
1901	89	0.5	1.8	2.5
11	137	1.1	2.4	5.3
21	—	—	—	—
31	135	1.9	2.5	7.9
41	184	5.4	4.8	26.3
51	236	17.3	7.5	112.3
61	212	28.5	7.7	146.2

	Number of Establishments	Salaries[1] ($millions)	Number of Employees (thousands)	Value of Production[1] ($millions)
St.Maurice				
1901	74	0.4	1.5	1.6
11	104	1.8	6.8	18.2
21	—	—	—	—
31	137	5.9	6.3	31.1
41	142	18.2	13.3	113.4
51	193	39.3	13.6	217.8
61	165	60.0	13.5	267.5
Region				
1901	352	1.2	4.6	5.8
11	540	3.3	10.8	27.6
21	—	—	—	—
31	564	8.9	10.8	44.5
41	601	25.5	20.6	151.9
51	738	62.8	25.1	364.8
61	631	98.5	25.3	462.4
Province				
1901	4,845	36.6	110.3	158.3
11	6,584	69.4	—	350.9
21	11,518	223.9	205.1	1,120.3
31	7,410	216.8	204.8	1,002.3
41	8,711	393.8	327.6	1,841.1
51	11,861	1,005.6	417.2	4,916.2
61	10,955	1,626.6	423.7	7,327.3

Source: Census of Canada, 1901 to 1961.

1 In current dollars.

2 Not available.

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