



The Canadian Rural Revitalization Foundation

*Seven Reports
on the Identification of Rural Indicators
for Rural Communities*

5. Competitiveness

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Introduction

Competitiveness is a multi-dimensional feature of an economic entity, such as a firm, industry, region, or nation, operating in a market economy that describes its economic performance in relation to other entities. In recent years, the term has become a widely used concept in economic literature and a central research and policy preoccupation of both advanced and developing countries, even though its meaning has remained largely misunderstood (Reiljan, Hinrikus and Ivanov, 2000).

Part of this growing importance of competitiveness stems from the commonly accepted thinking that a nation's economic growth and standard of living is directly linked to the ability of its industries to compete in the global economy. In fact, it has been said that competitiveness can be considered the "key rationale for economic restructuring" (Bollman and Bryden, 1997). Achieving competitiveness has become even more imperative in the context of increasing economic integration and globalization that requires a constant growth of national competitive strength.

Whatever the range of competitiveness considered (local, national or international competition), the capacity of an economic entity to achieve sustained economic growth and improvement in standard of living is viewed as dependent on the extent to which that entity has in place both the requisite macroeconomic, political, legal and social context for development and what Michael Porter (2004) terms "the microeconomic foundations of productivity", defined as the sophistication with which domestic companies or foreign subsidiaries operating in the country compete and the quality of the microeconomic business environment in which they operate. Consequently, in the last twenty years or so, analysis of the complex factors that influence the competitiveness of countries and regions has become a centerpiece of national industrial and economic research agendas.

Definition of Competitiveness

As noted by Kitzmantel (1995), competitiveness is like any other human quality that everybody strives for but is difficult to define and even more difficult to achieve. In a majority of discussions and studies on the subject of competitiveness, the typical approach appears to be focused around the various factors and goals used to measure competitiveness instead of defining the actual concept itself. Thus, some stress a country's low costs or the level of its exchange rate, while others emphasize its technological leadership or growth rate (Boltho, 1996; Fröhlich, 1989). While this is the same approach followed in this report, especially in our operational definition and measurement of competitiveness, it is important to first define theoretically what this concept means.

Reiljan, Hinrikus, and Ivanov (2000) explain that competitiveness reflects a position of one economic entity (country, industry, enterprise, household) in

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relation to other economic entities by comparing the qualities or results of activities reflecting superiority or inferiority. It can be defined both in a narrow and in a broader sense. In the narrow approach, competitiveness is explored in conditions where entities' interests are conflicting (i.e. achievement of the aim by one entity makes it impossible for another entity to achieve the same aim). In the broader approach, competitiveness is not considered as a zero-sum game, because an entity's gain does not necessarily come at the expense of others.

There are three levels of competitiveness. The lowest level of competitiveness is the ability of an entity to survive or adapt passively to the competitive environment without significantly changing or developing itself. The medium level of competitiveness is the ability to respond actively to changes in the competitive environment and thereby improve its own qualities and make its activities more efficient. The highest level refers the ability to influence the competitive environment through more efficient operation, quicker development than competitors.

In a sense the narrow approach to competitiveness, stated above, is based on the mercantilist notion that a nation's economic strength is measured by its foreign trade surplus, that imports are undesirable because they displace domestic employment, or that low wages in poor countries are a threat to the growth of rich countries. In this view a country's level of competitiveness is defined by its share of the world market for its products, making competitiveness a zero-sum game as one country's gain comes at the expense of others.

This view of competitiveness is used to justify intervention to skew market outcomes in a nation's favour (so-called industrial policy). It also underpins policies intended to provide subsidies, hold down local wages, and devalue the nation's currency, all aimed at expanding exports. In fact, it is still often said that what makes a nation more competitive are lower wages. However, the world economy is not a zero-sum game. Many nations can improve their prosperity if they can improve productivity. Thus, to understand a nation's or region's competitiveness, the starting point must be the underlying sources of its prosperity, which are found in the *productivity* of its economy, as measured by the value of goods and services produced per unit of human, capital, and natural resources. The central challenge in economic development, then, is how to create the conditions for rapid and sustained productivity growth (Porter, 1990; McArthur and Sachs, 2002).

Consistent with the above, the dominant approach in the literature has been to define competitiveness in terms of its ascribed economic goals and the structural, institutional and policy conditions deemed relevant to achieve it. Thus the two most principal international institutions, the World Economic Forum (WEF) and the World International Institute for Management Development (IMD), which publish annual competitiveness index reports, define the concept as follows. The WEF defines competitiveness as "the ability of a country to achieve sustained

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high rates of growth in gross domestic product (GDP) per capita", and the IMD defines it as "the ability of a country to create added value and thus increase national wealth by managing assets and processes, attractiveness and aggressiveness, globality and proximity, and by integrating these relationships into an economic and social model" (Garelli, 2003).

Based on the above definitions, the WEF and IMD derive competitiveness indexes that attempt to measure growth and other economic outcomes as determined by various structural, institutional and policy factors. The WEF publishes the *Growth Competitiveness Index (GCI)*¹, a unified index that combines individual indexes on various factors of growth including technological progress, public institutions, and the macroeconomic policy environment. The underlying argument is that a nation's or region's rate of economic growth and standard of living depends upon the contributions of these factors. Thus the GCI aims to measure the capacity of each national economy in achieving sustained economic growth over the next five to ten years (Garelli, 2003). The IMD's competitiveness index, published in its annual *World Competitiveness Yearbook (WCY)*, is derived from four factors (past economic performance, government efficiency, business efficiency, and infrastructure), each of which is further subdivided into five factors.

Some economists believe, however, that while stable political, legal, and social institutions and sound macroeconomic policies create the *potential* for improving national prosperity, wealth is *actually* created at the microeconomic level—in the ability of industries and firms to create valuable goods and services using efficient methods. As Krugman (1990; 1994; 1996) argued, it is not countries that compete with one another but rather the firms in those countries that compete. Therefore, the economic competitiveness of a country or region must be defined such that it reflects the competitive strengths of local-level firms and industries. Consistent with this view, the WEF began publishing a supplementary index, called the *Business Competitiveness Index (BCI)*, which defines competitiveness in terms of the "sophistication with which domestic companies or foreign subsidiaries operating in the country compete, and the quality of the microeconomic business environment in which they operate" (Porter, 2004).

Indicator Development

Attempting to define competitiveness of a country only on the ground of macroeconomic goals, such as higher growth, could be considered a limited and one-sided approach. It may be argued that countries and regions with them are competing with each other from the aspect of human and social development, including such goals as education, health conditions, equal rights and democracy (*UNDP Human Development Reports 1991-1998*). While on empirical grounds, most of these social objectives may be difficult to include directly in the measure of competitiveness, particular attention should be paid to the issue of

¹ The WEF publishes the *Growth Competitiveness Index* and other related indexes in its annual *Global Competitiveness Report (GCR)*.

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employment. A job guarantees that each member of society utilizes his or her abilities in development, while unemployment has such a negative social impact on a country's development that job creation should be included as an indicator in the socio-economic evaluation of competitiveness. The larger implication here is that international competitiveness theory should form links between the broad macroeconomic objectives of growth and open economy, and the human development needs that can influence competitiveness. The case for incorporating employment in the measure of competitiveness is even stronger in the context of rural communities in which most of the populations rely on labour activities.

Based on the above, we have chosen to operationally define the economic competitiveness of a community or region as *the capacity of firms and industries located in it to achieve sustained income and employment growth relative to other communities*. Two related indicators of competitiveness could be derived from this definition: *income* and *employment*. Both indicators are used to provide alternative measures of the competitive strengths of various industries and the regions in which they are located, relative to their counterparts in a country.

Shift-Share Analysis Approach

In order to determine the competitive position of each region, *shift-share analysis* is employed. **Shift-share analysis** enables the researcher to isolate the competitive position of a region from the impact on it of national trends and the industrial mix of income or employment that existed in the region at the beginning of the time period being studied. It provides a picture of how well the region's current mix of industries is performing and how well individual industries are doing. The analysis makes it possible to separate income or employment growth into three effects: national growth effect, industrial structure effect, and regional competition effect. Following Barff and Knight (1988), the national growth effect, N , is measured as the increase in a region's gross income or employment that will occur if all the industries in the region grew at the same rate as national income/employment. The following equation captures this national growth effect:

$$(1) \quad N = \sum_{i=1}^n (G \times R_i)$$

where G represents the growth rate of national income or employment during the period; R_i represents the portion of total regional income or employment in the base year that originates in industry i .

The industrial structure or mix effect, I , accounts for the impact of the region's industrial composition. For instance, a region with a high concentration of high growth industries will have a positive industrial mix effect; but a region with a high concentration of low growth industries will have a negative industrial effect. The following equation represents the industrial structure effect:

$$(2) \quad I = \sum_{i=1}^n [R_i \times (G_i - G)]$$

where G_i represents the national growth rate of industry i during the period.

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The regional competition effect, COM, measures the difference between regional and national industrial growth rates. A positive competitive position implies that, after accounting for national growth trends and the industrial mix of the respective region, the region's economic performance is superior to the average region. The following equation represents this effect:

$$(3) \quad COM = \sum_{i=1}^n [R_i \times (g_i - G_i)]$$

where g_i represents the regional growth rate of industry i .

Evaluation of the Indicator

Data on GDP for all Census Sub Divisions (CSDs)², estimated from their corresponding provincial Gross Domestic Products (GDPs)³, were used to illustrate the income indicator using the above analysis. Shift-share analysis can be applied in either a comparative static or dynamic approach. In the static approach, the industry mix at the beginning of the time period is used to calculate the industrial mix effect over the time period under consideration. This method makes little sense if industrial mix changes significantly over the time period, and thus would be of limited value when applied to long time periods. Also, this approach does not account for continuous changes in the size of a region's total income over the time period, since it uses only the initial regional and national industrial growth rates to calculate the growth effects for the period.

The dynamic shift-share approach eliminates these problems by applying the annual national growth rate to the actual regional income at the beginning of that year, thereby calculating the three effects for each and every year of the time period.

The following illustration in Table 1 uses this dynamic approach by computing the three types of effects (national, industrial and competitiveness) for 2001:

² A census subdivision (CSD) is the general term for municipalities (as determined by provincial legislation) or an area treated as municipal equivalents for statistical purposes (Statistics Canada, 2004). Geographic boundaries are based on 2001 Statistics Canada census definitions. CSDs with populations of less than 250 people have been excluded from this analysis since the values become unreliable due to confidentiality transformations.

³ Gross Domestic Product (GDP) data was obtained via the Canadian Socio-Economic Information Management System (CANSIM) and measured at basic prices (using 1997 constant dollars) by the North American Industrial Classification System (NAICS) at the provincial and territorial level for the years 1993 to 2002. The three industrial classifications included in this analysis were: (1) Agriculture, Fishing, Forestry, Hunting; (2) Utilities; and (3) Manufacturing.

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Table 1:

Average national growth, industrial mix, and competitive effects on the growth of income of CSDs within Canadian provinces (2001)

Province	Total Growth	National Growth Effect	Industrial Mix Effect	Competitive Effect
Newfoundland	-3.6	2.9	-3.6	-2.9
Prince Edward Island	7.7	1.3	-3.2	9.6
Nova Scotia	37.7	6.3	-3.5	35.0
New Brunswick	18.4	9.1	-4.4	13.6
Quebec	166.5	163.6	28.7	-25.9
Ontario	505.2	211.5	64.9	228.8
Manitoba	14.3	8.7	-24.3	29.9
Saskatchewan	-156.8	12.7	-64.6	-104.9
Alberta	-94.4	19.2	-25.0	-88.6
British Columbia	5.6	32.0	-34.1	7.7
Yukon	0.0	0.0	0.0	0.0
Northwest	-0.1	0.0	0.0	0.0
Nunavut	0.0	0.0	0.0	0.0
Total	83.6	83.6	0.0	0.0

The second column of the above table shows the average total growth of income for CSDs within each Canadian Province and Territory for the year 2001. For example, it shows that for 2001, the typical CSD located in Ontario experienced a total income or output growth of \$505.2 million, the highest among all CSD averages in Canada. On the other hand, the typical CSD in Saskatchewan experienced a total decrease in income of \$156.8 million, the largest such decrease in economic growth in Canada.

The last three columns of the table indicate the sources of this income growth or decrease. The third column shows the component of the income change for a typical CSD in each province that can be attributed to the growth of the national economy as a whole. For instance, of the \$505.2 million income growth obtained in a typical CSD in Ontario during the period under review, \$211.5 million is attributed to the *national growth effect*. This means that if the industries we are considering (agriculture, forestry, utilities and manufacturing) grew in Ontario's CSDs at the same rate as their counterparts nationally, then the amount of additional output or income created in these CSDs would be \$211.5 million (on average). However, since we know that \$505.2 million was created in Ontario in 2001, we need to examine what might account for the additional \$293.7 million income. To do this, we turn to the industry mix and competitiveness effects, which are shown in the last two columns of the table.

The *industry mix effect* measures the part of the total income or output growth of a typical CSD that is due to the fact that the national growth rate for industries

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concentrated in that CSD is higher or lower than the average national growth rate for all industries. Note that this only means that the types of industries located in the CSD are performing better or worse *nationally* than the average growth rate for all industries in the economy. It does not necessarily indicate the actual performance of those industries within the region itself. The industry mix effect will be positive or negative for a region depending on whether or not that region has a high concentration of high or low growth industries.

Turning to example of Ontario, the results in Table 1 show that the average CSD in this province experienced an industry mix effect of \$64.9 million in 2001. This means that the national growth performance of the kinds of industries concentrated in Ontario's CSDs were stronger than the average growth performance for all industries in the national economy. As a result of such industries performing better in Ontario than in the rest of Canada, regional growth in Ontario is positively impacted by \$64.9 million in 2001.

However, industry performance only accounts for \$64.9 million of the \$293.7 million in additional income Ontario CSDs are experiencing. This suggests that the additional income growth of \$293.7 million came from somewhere else. In fact, it came from these CSDs' competitive advantage. The *competitiveness effect* measures the ability of the regional economy to capture a growing share of each industry's growth. It measures the regional growth performance of industries located *within* a CSD relative to the performance of such industries nationally. Again, in terms of the Ontario example, it suggests that \$228.8 million in regional growth can be attributed to the CSDs competitive advantage over other CSDs in the rest of Canada. This positive competitiveness effect shows that these CSDs gained additional income or output growth over those that can be attributed to national growth and their own industrial structures. If the competitive component were negative, as is the case with Quebec, then these regions would be regarded as less competitive.

The results in Table 1 suggest that on average CSDs in Canada are competitive, except those located in Newfoundland, Quebec, Saskatchewan and Alberta. CSDs located in Ontario are the most competitive. Those CSDs located in Nova Scotia are a distant second. Those located in Saskatchewan are the least competitive, followed by those in Alberta. In terms of the national growth effect, on average CSDs in Ontario benefit the most from growth in the national economy, followed by those in Quebec and distantly by those in British Columbia. Agricultural, fishing, forestry, utilities, and manufacturing industries constitute a mix of low-growth industries for all CSDs, as evident in the negative industry mix effects reported for all CSDs, except for those located in Quebec and Ontario. In spite of this, however, more than half of all CSDs on average were competitive in 2001.

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The following table presents a breakdown of a CSD's competitiveness by Urban-Rural status⁴ of the CSD:

Table 2:

Average national growth, industrial mix, and competitive effects on the growth of income of CSDs by Urban-Rural type of CSD (2001)

Urban area/Rural area status of CSD	Total Growth	National Growth Effect	Industrial Mix Effect	Competitive Effect
Urban Core	173.6	110.9	43.0	19.7
Urban Fringe	161.9	97.9	27.1	36.9
Rural Fringe, in CMA/CA	102.3	75.9	9.5	17.0
Urban, outside CMA/CA	124.0	96.9	24.6	2.5
Rural, outside CMA/CA	56.8	77.5	-13.3	-7.4
Total	83.2	83.6	-0.1	-0.2

Based on the results in table 2, we see that CSDs located in urban core regions had the largest amount of total growth on average in 2001. However, CSDs located in urban fringe areas were deemed to be most competitive with nearly \$37 million of total economic growth attributed to the total growth of the region. On average, urban core CSDs can attribute \$110.9 million of their total economic growth to the national growth effect and \$43 million to industrial effect.

On the other hand, CSDs in rural areas outside CMA/CAs witnessed the smallest amount of total economic growth and were also found to be least competitive in 2001 (on average). For rural CSDs outside CMA/CAs, \$77.5 million of total economic growth can be attributed to the national growth effect while the industrial effect negatively impacted growth by \$13.3 million and the competitiveness effect negatively impacted growth by \$7.4 million.

Future Research

In future, one might want to include more industries in the development of a competitiveness index. Currently, we are limited to focusing on agriculture, fishing, forestry, utilities and manufacturing due to the lack of available GDP and import/export data at the industry and provincial level. One might also want to expand the national and regional growth, industrial mix and competitive effects indices to include years outside of the current 1993-2002 window that we are working with.

⁴ These breakdowns include urban core, urban fringe and rural fringe and distinguish between central and peripheral urban and rural areas within or outside of a census metropolitan area (CMA) or census agglomeration (CA) (Statistics Canada, 2004).

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