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The Canadian Rural Revitalization Foundation

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

1. Economic Stability

Prepared for the Rural Secretariat
of Agriculture and Agri-Food Canada

Report Authors:
Jamie Dressler
Mike Burns

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Introduction

All governments seek economic stability. Stable economies provide a context for easier planning, reduce public discontent, and provide a justification for remaining in power. This remains true for governments at all levels from national to local.

However, attempting to maintain stability will often result in a high rate of inflation (Glyfason, 1999). Thus, as long as inflation continues to rise, the economy must continue to grow for it to maintain stability. Therefore, economic growth often goes hand in hand with economic stability. This is supported not only by political rhetoric but also by the vast amount of literature linking economic growth and economic stability.

Economic fluctuations occur when real GDP does not grow smoothly. Recessions are periods during which real GDP falls reflecting periods of high unemployment and low incomes. These fluctuations in output and employment are often treated as an expected part of the business cycle.

There are two forms of thought associated with economic stability. Some economists view the economy as inherently unstable. They maintain that the "economy experiences frequent shocks to demand and supply…(and) unless policymakers use monetary and fiscal policy to stabilize the economy, these shocks will lead to fluctuations in output, unemployment and inflation" (Mankiw, 2001). These economists believe that policy should stimulate the economy when it is depressed and slow the economy when it is overheated. Other economists take a more laissez-faire point of view since they see the economy as naturally stable and blame poor, inefficient economic policies for fluctuations that occur within it (Mankiw, 2001). They contend that economic policy should not try to fix the economy rather it should simply allow the economy to unfold naturally.

Definition of Economic Stability

As expected, the definitions of economic stability differ between perspectives. Some take an approach that maintains that all economies are stable except for extreme conditions of volatility (Hausmann, 1996). They tend to consider relatively wide fluctuations in the economy as part of its 'natural' stability.

The Department of Finance Canada does not define economic stability but instead focuses on economic growth. They consider it

> "An increase in the production of goods and services over a given period. Nominal growth is the increase including changes in prices while real growth is the increase excluding changes in prices. Statisticians and economists have developed a concept called constant dollars so that they can exclude price changes from measures of growth. Constant dollar gross domestic product (Real GDP) is a measure of growth using the prices of a base year. Changes in constant dollar GDP only capture changes in actual or real production".

Thus, the Ministry of Finance infers that economic stability is a consistent real gross domestic product.

Sundrum considers that economic stability is linked to the basic structure of the economy (1990). Countries that are concentrated in agricultural based economies, for example, are inherently low growth (and low stability) economies, whereas those, which are service oriented, will show high growth (and stability).

Haberler argues that economic growth or stability can be measured by the increase of aggregate GNP, GNP per capita or by the average increase in output per worker. In the short run, there is little difference between aggregate GNP and per capita GNP. Both reflect short-run changes in unemployment. He uses the GNP data to predict the current stage of the business cycle, arguing, "The business cycle can tell us if we are in a recession or boom period and thus looking at this can notify us of our condition. During an upswing, GNP is higher, production is high, unemployment is low…(However) inflation can be an outside factor in the business cycle and slow it down" (1973). In other words, economic variation is considered part of the business cycle, and instability is considered to be extreme fluctuations or variations in that cycle.

Mankiw examines economic stability solely through a macroeconomic perspective. He is simple and to the point when he defines economic stability as the smooth growth of real GDP (Mankiw, 2001).

In conclusion, the consensus among economists is that economic stability occurs when there is consistent growth. However, this growth can be measured in many forms. Many believe that a true measurement of economic growth and stability should rely on real GDP (Mankiw, 2001; Department of Finance; Haberler, 1973). Hausmann (1996) and Sundrum (1990) go a step further and add other indicators to the mix but only at the macroeconomic level. As a result, many economists tend to characterize an economically stable region as one, which has consistent real GDP growth, low unemployment and high personal income levels.

Indicator Development

In accordance with these perspectives we will define economic stability as a measure of minimal fluctuations in output, unemployment and inflation. We will define output as GDP and account for inflation by using Real GDP. We will represent employment trends by using labour force survey estimates to calculate GDP per capita and CSD industry shares in order to measure economic stability at the regional level (Mankiw, 2001).

The following table presents a brief outline of the main indicators included in the index to measure economic stability:

Table 1:
Principle Indicators of the Economic Stability Index

Indicator	Reference	Operational Definition
1. Real Gross Domestic Product (GDP) per capita	Mankiw (2001); Haberler (1973); Sandrum (1990); Dept. of Finance.	((GDP/CPI)/LFS) in each of 11 principle industries for each year, 1987-97 {provincial level}
2. Industry Employment	Sandrum (1990); Dept. of Finance.	Percentage of individuals employed in each of 11 principle industries for 1996 or 2001 {CSD level}
3. Consumer Price Index	Mankiw (2001); Dept. of Finance.	CPI by basket content (all items) for each year, 1987-97 {provincial level}
4. Labour Force Survey (LFS)	Dept. of Finance	Annual averages of employment in each of 11 principle industries for each year, 1987-97 {provincial level}

Indicator Considerations:

1. Real GDP per capita

Gross domestic product (GDP) is an important indicator of economic stability because it monitors the overall growth or output of a given area. For instance, when Real GDP rises, it indicates that there has been growth in the region (Mankiw, 2001). Real GDP per capita is gross domestic product (GDP) divided by the consumer price index (CPI) and then divided by the number of people in the labour force according to the labour force survey (LFS). This measure was used at the provincial level for each of the 11 principal industries[1] in Canada for the years of 1987 to 1997. Real GDP is used to give a better, more accurate reflection of GDP while, at the same time, accounting for inflation.

2. Industry Employment

Employment is a critical factor when calculating the economic stability of a region because output depends on the amount of labour currently in place in each industry sector. Given a constant output/labour ratio and constant technological progress, output will rise as more labour is used. In other words, as rates of employment fluctuate, so will the regional economy. In order to calculate economic stability at the regional level, industry shares of

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[1] The 11 principle industries were determined as primary, utilities, construction, manufacturing, trade, transportation, finance & real estate, education, health, accommodation and government. These industries were selected by determining the 11 most predominant industries at the CSD level nationally.

employment at the CSD[2] level were utilized for each of the 11 key industries for 1996 and 2001. Different industry sectors must be incorporated into the economic stability model in order to get a more accurate reflection of stability in a given CSD (Mankiw, 2001).

3. <u>Consumer Price Index</u>

Consumer price index (CPI) is a measure of the overall level of prices that contribute to the cost of a fixed basket of goods, relative to the cost of that same basket the previous year. It is also an indicator of inflation, making the CPI an integral element of economic stability. The CPI data for 1987 to 1997 was factored into the real GDP equation in order to remove the overall influence inflation would have on economic stability. Inflation must be accounted for or the local data will be biased by general trends. By factoring out inflation through Real GDP, we get an unbiased reflection of economic stability attributed to a specific region.

4. <u>Labour Force Survey</u>

Labour force survey (LFS) estimates for each of the 11 key industry sectors at the provincial level for 1987 to 1997 were included in the economic stability index. These annual averages were used in order to get a real GDP per capita for each industry sector at the provincial level. The real GDP for each industry sector was divided by these annual averages of labour force employment for the corresponding industry, which, in turn, gave us the real GDP per capita (Mankiw, 2001).

In summary, here are the steps taken in order to measure the economic stability of a given region:

1. The following formulas were calculated for <u>each</u> of the 11 industries at the provincial level:

   ➢ Real GDP (constant price) was calculated using the following formula:
      • Real GDP {constant} = GDP {current} / CPI * 100
   ➢ Real GDP per capita (constant price) was calculated using the following formula:
      • Real GDP per capita {constant} = Real GDP {constant} / Labour Force Survey Estimate
   ➢ A provincial economic fluctuation index (PFI) was calculated using the following formula:

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[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 250 people have been excluded from this analysis since the values become unreliable due to confidentiality transformations.

- PFI = STDEV[3] of Real GDP per capita {constant} from 1987-97 / AVG of Real GDP per capita {constant} from 1987-97

2. A fluctuation index (CFI) was calculated for all CSDs using the following formulas:

   ➤ FI per industry {CSD level} = (Industry Share {CSD level} / Total Industry Share of all 11 industries) * PFI
   ➤ FI total {CSD level} = SUM of all 11 industry FIs calculated above
   ➤ CSD Fluctuation Index (CFI) {CSD level} = square root of the FI total calculated above

Evaluation of the Indicator

Based on the definition of economic stability provided by Mankiw (2001), we have incorporated three key indicators of stability into our index: economic growth, inflation, and unemployment. These have been integrated over the period from 1987 to 1997 since these were the most recent years when data was available at the time when the index was created. Our index measures economic stability from the standpoint of economic fluctuation. Thus, a CSD is deemed to have high economic stability if there degree of economic fluctuation is found to be low. On the other hand, a CSD with low economic stability would have a high degree of economic fluctuation.

The following table presents a breakdown of overall economic fluctuation averages for CSDs in Canada in 1996 and 2001:

Table 2:
Economic Stability: Average Characteristics of CSDs in Canada

	Degree of Economic Fluctuation				
	N	Minimum	Maximum	Mean	Std. Dev.
1996	4041	0	0.443	0.285	0.052
2001	4001	0	0.433	0.283	0.053

In 2001, 4001 CSDs in Canada were analyzed and results of the economic fluctuation index range from a low of .0 [meaning no economic fluctuation was present within a particular CSD] to a high of .433 [meaning there was a very high degree of economic fluctuation present within that particular CSD]. The average degree of economic fluctuation in 2001 for a CSD in Canada was .283. In 1996, 4041 CSDs in Canada were analyzed and results ranged from a low of .0 to a high of .443. The average degree of economic fluctuation for a CSD in Canada was .285 in 1996.

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[3] The standard deviation of real GDP divided by the mean of real GDP gives us the coefficient of variation, which is a measure of overall variability (Keller). We will call this measure of variation the Provincial Industry Fluctuation Index (PFI).

The following table presents a breakdown of the average levels of economic fluctuation of CSDs in Canada by province:

Table 3:
Economic Stability: Average of CSDs by Province

Province	Degree of Economic Fluctuation	
	1996	2001
Newfoundland	0.326	0.330
PEI	0.358	0.353
Nova Scotia	0.268	0.265
New Brunswick	0.293	0.290
Quebec	0.260	0.260
Ontario	0.268	0.265
Manitoba	0.332	0.328
Saskatchewan	0.334	0.330
Alberta	0.288	0.288
British Columbia	0.255	0.250
Total	0.286	0.283

Based on the table above, PEI has the highest degree of economic fluctuation for both 1996 and 2001 making it the province with the lowest amount of economic stability. Economic fluctuation levels for the average CSD in PEI dropped slightly from .358 in 1996 to .353 in 2001. Conversely, British Columbia has the lowest degree of economic fluctuation. The level of economic fluctuation for the average CSD in BC decreased slightly from .255 in 1996 to .25 in 2001. Thus, BC was found to be the most economically stable province in Canada.

The following table looks at economic stability averages for CSDs by Urban-Rural Type[4] of CSD:

Table 4:
Economic Stability: Average of CSDs by Urban/Rural Type

Urban/Rural Area Type of CSD	Degree of Economic Fluctuation	
	1996	2001
Urban Core	0.260	0.257
Urban Fringe	0.269	0.263
Rural Fringe, in CMA/CA	0.280	0.272
Urban, outside CMA/CA	0.278	0.276
Rural, outside CMA/CA	0.294	0.290
Total	0.287	0.283

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[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).

As we see in table 4, the highest degrees of economic fluctuations were found in rural areas outside of CMA/CAs for both years. On the other hand, economic fluctuation levels were lowest in urban core areas. In fact, the levels of economic fluctuation steadily increased as the type of CSD moved from urban core to rural outside CMA/CA.

This economic stability index has a few underlying assumptions. First, in order to obtain a fluctuation index at the CSD level, the assumption was made that the fluctuation of an industry located within a particular CSD is proportional to its share of labor force in that CSD. However, this is a reasonable assumption, especially for those CSDs in which the dominant factor of production is labour and any volatility in the level of employment is likely have the greatest impact on economic fluctuation (Meier, 1984).

In addition, the Territories (Northwest, Yukon and Nunavut) were excluded from this index due to the limited amount of available data at the territorial level. Both GDP and CPI data sets were only available at the provincial level and were not available for the three Territories of Canada at the time when the economic stability index was created.

Of all the economic indicators that exist, many are based on a macroeconomic level while only a few can contribute to a regional economic stability index. Therefore, we must omit these indicators from the regional economic stability index. Another problem is that many of the economic indicators (such as technological progress) cannot be directly measured. Thus, we must use proxy variables, which would take time to implement.

Future Research

In the future, research on economic stability indicators may include proxy variables for non-quantitative indicators and integrate these variables into an economic stability index.

If at all possible, it would also be worthwhile to incorporate a measurement for GDP at the regional level rather than provincial. This could be developed into four categories of consumption, investment, government purchases and net exports (Mankiw, 2001). It would be worthwhile developing more indicators that could be used in an economic fluctuation index. These indictors could include resources, various types of industries, openness to globalization, technological progress or adaptation to technology and competition.

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