Regional Shift-Share Analysis:

Changes in Employment Growth and Implications for York Region

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Commissioned by: Regional Municipality of York

Table of Contents

Index of Tables

Illustration Index

Executive Summary

This report was commissioned to complete a shift-share employment analysis of York Region and the surrounding municipalities. To accomplish this task, two related shift-share analyses were completed: one broad area and one specific area shift-share study. The broad area shift-share analysis is at the Toronto economic region level (which includes the Municipality of York). The specific area shift-share analysis breaks down the Toronto economic region into the regional municipalities of York, Peel, Durham, Halton and Toronto.

What follows will be a brief explanation of the shift-share methodology, the data sources used, and an overview of the results.

Explanation of the Shift-Share Method

The shift-share method explains overall regional employment growth that has occurred in different industries over a distinct period of time. The methodology decomposes employment growth into three components:

- national or provincial share growth
- industry mix growth, and
- competitive (or regional) share growth

Together, these three categories broadly explain the driving forces behind a region's changing employment patterns.

The shift-share method works by comparing the employment growth in a reference area (national/provincial share), to the regions within it (regional share). For the purposes of this study, the province of Ontario is the reference area. In this report, changes in employment in the Toronto economic region and the Regional Municipality of York will be compared against employment changes in Ontario as a whole.

In this report, **provincial share growth** is the overall change in employment across all industries in Ontario. This provincial share employment growth is to give an overall impression of how well the entire economy is doing. Roughly, the idea is that “a rising tide lifts all boats” – if overall employment growth is high this will affect all industries.

The **industry mix growth** is the growth rate of a given industry category in Ontario minus the provincial share growth. The idea here is that if the overall economy is doing well, the provincial growth rate should then be subtracted from the industry category's growth rate to give a more balanced picture about how that particular industry is performing. For example, if an industry category has a growth rate less that the overall provincial growth rate it implies that the industry is lagging in growth. In this case, the industry mix would be negative.

The **competitive share growth** (also called regional share growth), is the growth of a regional industry minus the total growth of that same industry provincially. If regional share growth is negative, then employment in the industry within the region under study is growing slower than employment in the same industry in other regions of the province. Regional share growth is representative of unique

advantages in the region that account for increased employment. Possible explanations for positive regional share are natural resource endowments, a highly skilled workforce, or entrepreneurial spirit.

Uses and Limitations

The shift-share method works with industrial employment data, and it is meant to be used for the analysis of broad trends. The extrapolation of these trends is beyond the scope of this report. With limited data it is also beyond the scope of the shift-share method to explain the causes of the allocations of provincial share, industry mix share, and regional share growth for each industry. However, the method does provide very useful information about past trends, and useful framework for further analysis.

Methodology and Data Sources – Census and the LFS

This report makes use of two different sources of industrial employment information covering overlapping periods. This was done because there was relatively little industrial employment information available specifically targeting the Region of York.

For information about York Region this report drew on the Canadian census information available from 1996, 2001 and 2006. Unfortunately, the 1996 census used a different standard of industry classification than is currently in use. This means that pre-2001 census industry employment data is not directly comparable with later surveys without some information loss (see “Data Sources and Issues” section of the report for more details).

The Labour Force Survey (LFS) produced by Statistics Canada was used as a complementary source of industry employment data. The LFS has annual statistics available from 1988-2007, which have all been converted to the current industry classification system. However, because the LFS makes use of a smaller sample than the census, the geographic areas covered by the survey are larger. Instead of regional municipalities, the LFS provides data by the larger “economic region” geographical unit. In the current report, the shift-share method has focused on the Toronto economic region. The Toronto economic region contains the municipalities of York, Halton, Durham, Peel, and Toronto.

This report makes use of the LFS and examines two periods, from 1988-1997 and 1998-2007, and uses each of them to conduct a shift-share analysis. This breakdown into two periods is meant to give a broad historical view of the regional changes, as well as to provide some basic confirmation of the shift-share results calculated using census data for the Regional Municipality of York over the periods 1996-2006 and 2001-2006.

Results of the Shift-Share Analysis

The York Region shift-share analysis clearly shows that all regional industry categories display positive competitive share growth. In short, this appears to be very good news for the Region of York. However, a variety of factors, in addition to the competitive share growth of York Region, should be kept in mind in the use of this report.

First, the industry mix growth rates should be considered in the overall analysis of an industry's employment potential regionally. A weak industry mix may be a signal that the entire industry category is in decline. It could also, however, be that the industry is facing challenges are caused by factors that will become less important over time. As mentioned, an in-depth explanation of the regional share growth, or the industry mix growth is beyond the scope of this report.

Second, the overall amount of employment an industry category provides regionally, is likely also an important consideration, depending on the policy goals of the Region of York.

Finally, the shift-share method requires only a limited amount of industrial employment data in order to produce useful results. Policy analysts need to bear in mind the unique factors of York region when interpreting the results.

Introduction

The report that follows uses the shift-share technique to model employment changes over time, measured by broad employment category, in the Regional Municipality of York. In order to convey both broad trends and those specific to the Region of York, this report makes use of two sources of data, and examines that data over a variety of time periods, in order to discern useful industrial employment trends.

Reliable data precisely targeting York Region is not available on a yearly basis. However, the Labour Force Survey (LFS) does provide yearly industrial employment statistics, but for the Toronto economic region as a whole. The census, which is conducted every five years, does contain useful employment data about York Region. This report makes use of both the census and the LFS in an attempt to convey the overall trends affecting industry employment growth. Further details about each data source and the appropriate interpretation of each are contained in each relevant section.

The traditional shift-share methodology examines the employment by industrial category at two points in time, and examines the growth in employment over the chosen period. The overall employment change is decomposed into growth attributed to national share, industry mix and regional or competitive share (details in the following section). The regional share, also known as competitive share, is considered to represent the factors specific to the region that have accounted for growth.

Interpretation: A Few Words of Caution

While competitive share growth is an important measure, readers are cautioned to examine other equally important factors. For example, an industry category may have a high regional share growth simply because as an industry it employs very few people, and a small change in employment appears as a large percentage gain. Therefore, *policy makers should also examine the total number of jobs an industry contributes to the regional economy* compared to other industries.

The shift-share methodology shows employment trends affecting a region. This analysis should give informed readers a greater understanding of the strengths of York Region and by extension how to face future economic challenges. However, the methodology does not purport to explain what the causes of these employment trends are. Therefore, in interpreting these shift-share results, a broader view must be maintained of the challenges facing the overall economy and the likely impacts on growth. The results of this shift-share analysis should be considered as an important part of regional economic review.

Future Directions For Research

By construction, the shift-share analysis examines trends in industrial employment using a relatively modest amount of data. Other economic forecasting techniques based on the shift-share methodology can be used to explain the regional competitive share portion of employment growth. While such a forecast is beyond the scope of the current document, it could be considered another direction for future research.

The Traditional Shift-Share Methodology

The traditional shift-share method has commonly been used in regional economic studies to measure change in a variable of interest, often employment. The total change of the variable of interest is broken down into the three categories commonly referred to as national growth, industrial mix, and regional share components.

National growth is calculated as the change in employment in a region because of the growth experienced in the reference area, in this case Ontario. The idea is that the regional growth can be partially attributed to provincial growth. The **industrial mix** is the share of employment change in an area that can be attributed to the growth rate of the regional mix of industries. The residual measure is called the **competitive** or **regional share** component. This measures the change in regional industry employment rates against the reference area's average industry change (Dinc, 2002).

Using notation from Brox and Carvalho (2006) in this traditional form, the shift-share model describing the change in employment rates can be specified as:

$$\Delta E_i^r = g^n E_i^r + (g_i^n - g^n) E_i^r + (g_i^r - g_i^n) E_i^r \quad (1)$$

where g^n is the reference area's (Ontario's) growth rate, and E_i^r is the employment from industry "i", in region "r". Together, $g^n E_i^r$ is the national growth of employment change. The industrial mix is the difference in growth between industry i and the national average $(g_i^n - g^n)$. Finally, the regional share is the residual difference of growth between the regional industry and the industry average in Ontario.

A Note About the NAICS Categories Used

The North American Industry Classification System (NAICS) is used in this analysis in order to measure the change in employment by industry. A number of categories have been combined for consistency across data sources, and in order to more clearly show broad employment trends affecting the region.

The first change was to create a primary industry category consisting of agriculture, forestry, fishing, mining, oil and gas and utilities. This is consistent with the census data used elsewhere in this report. These categories are also all considered to be goods producing industries.

The remaining goods producing industries are construction and manufacturing. Also, The government industry categories of health, education, and public service employment data have been combined into their own category.

Finally, the service-oriented industry employment has also been combined. This single service category now encompasses information, culture and recreation, accommodation, food services, and the “other services” NAICS category.

The table below summarizes the classifications used in the analysis.

NAICS Industry Categories and Explanations

Industry Category	Explanation
Primary Industry	The “primary industry” category includes agriculture, forestry, fishing, mining, oil and gas, and utilities.
Construction	The “construction” category encompasses residential, heavy civil engineering construction, trade contractors and all their various sub-trades.
Manufacturing	The “manufacturing” category covers food and textiles as well as petroleum refineries and coal products. Resins, plastics, petrochemicals, primary metal manufacturing and computer manufacturing are also included.
Wholesale and Retail Trade	The “trade” category includes wholesale stores and retail stores.
Transport	The “transport” category includes all types of transportation including by road, rail and sea.
Finance, Insurance, Real Estate (FIRE)	The “finance, insurance, real estate” category, abbreviated as FIRE, contains employment due to financial institutions, insurance companies, funds, real estate, and property leasing.
Professional, scientific and technical services	The “professional, scientific and technical services” category includes many highly skilled professional groups such as lawyers, accountants, managers, and scientific researchers. Also included are advertisers and public relations firms.
Business, building and other support services	The “business, building and other support services” includes employment through management of companies, administrative support, support services and building services.
Education, Health and Public Administration	The “education, health and public administration” category contains employment by health care providers, teachers, and local, provincial and federal public servants.
Other Services	The “other services” category captures employment in the information, culture and recreation fields, accommodation and food services, as well as other services.

Table 1: NAICS industry categories used and explanations

For a compete listing of the contents of each NAICS category, please refer to the Statistics Canada web site (http://www.statcan.ca).

Broad Area Shift-Share Analysis

Overview

This portion of the report makes use of the Labour Force Survey (LFS) data to compare how industrial employment within the economic regions of Ontario has changed over the past twenty years. The LFS provides detailed annual employment data using the NAICS[1] industrial categories. Studying industrial employment by economic regions allows for the examination of broad industry trends, which can be kept in mind when the more specific regional analysis is done.

Economic regions are a particularly useful geographical unit of measure: there is an abundance of employment data available for economic regions on an annual basis. The size of the economic regions is also an advantage, because it allows for relatively straightforward comparison between different areas. In contrast, a large-scale comparison of regional municipalities would quickly become unmanageable.

While smaller geographical units are available in detail from the national census, there is little in the way of data sets with more frequent observations. While smaller area surveys are available, the sample sizes are often too small to be representative of the underlying population of the area. This is especially true when, as required for this report, industry employment details are required for survey respondents.

1 NAICS – North American Industry Classification System

Geographical Coverage

The economic regions of Ontario, with the exception of the Northwest region, are shown in the map below. The Toronto economic region is highlighted.

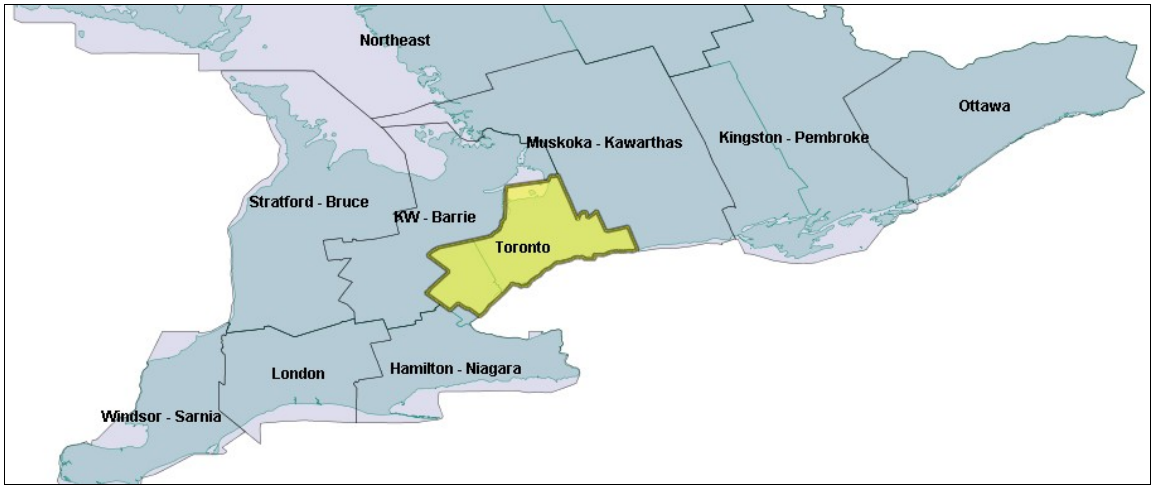

Illustration 1: Economic regions of Ontario. Northwest region not shown.

The current portion of the study is concerned with the broad industry trends impacting the Toronto economic region, which includes the municipality of York (Illustration 2). The Regional Municipality of York is also equivalent to Statistics Canada's census division geographical unit, and the two terms will be used interchangeably in this report.

Illustration 2: Toronto economic region and the census divisions within

Employment By Industry

The following colour graphs show the change in employment, by industry, in the Toronto economic region from 1988-2007 as recorded by the Labour Force Survey. See appendix for black and white versions.

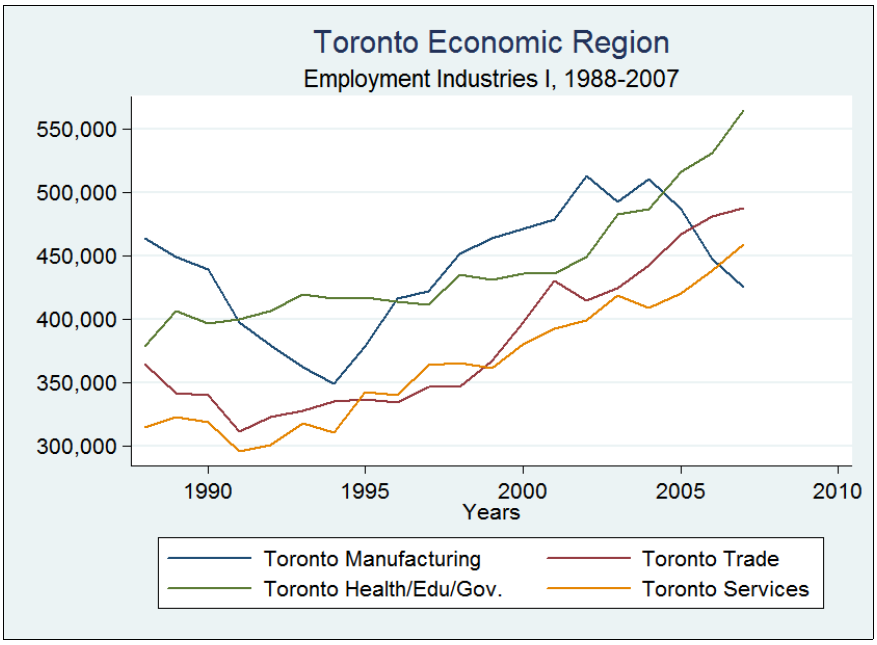

Illustration 3: Employment by industry I in Toronto economic region 1988-2007

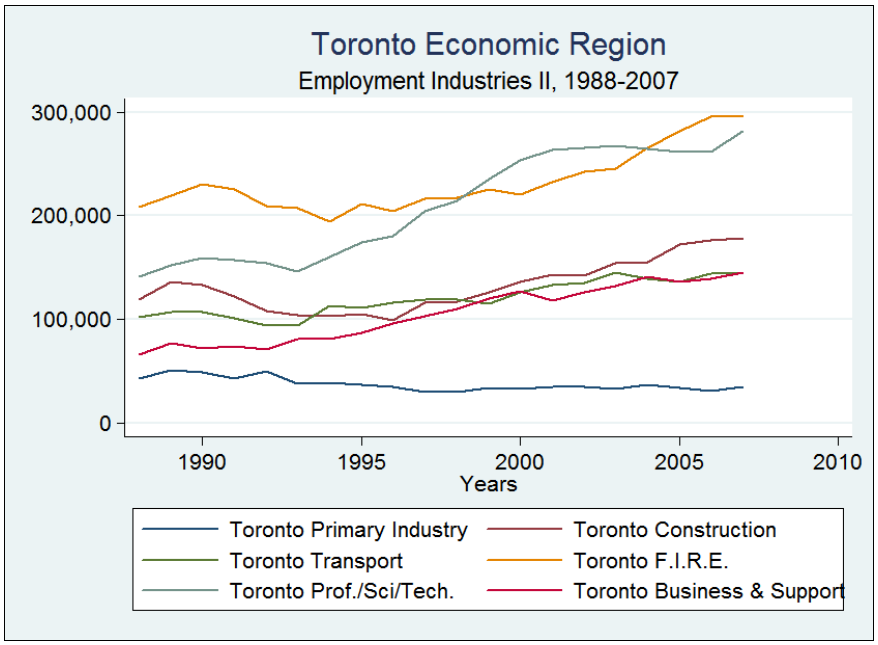

Illustration 4: Employment by industry II in Toronto economic region 1988-2007

The following table shows the total industry employment in 1998 and 2007. The Toronto economic region as a whole grew by 22% between 1998 and 2007. The percent of total growth column shows how much each industry category contributed to the total number of new jobs.

Toronto Economic Region			
Industry	**1998**	**2007**	**Percent of Total Change in Employment**
Primary Industries	30,000	34,600	1%
Construction	116,800	178,600	10%
Manufacturing	451,900	425,700	-4%
Wholesale and Retail Trade	346,900	487,600	23%
Transport	119,400	144,400	4%
F.I.R.E.	217,300	297,100	13%
Professional, Science, Tech.	214,500	281,400	11%
Business & Support Services	109,700	144,900	6%
Edu., Health, Public Admin.	435,500	565,100	21%
Other Services	365,700	459,300	15%
Total	**2,407,700**	**3,018,700**	100%

Table 2: Total industry employment, Toronto economic region 1998, 2007

Shift-Share Results

The shift-share analysis is used to expose industrial employment trends by breaking down changes in employment into readily understandable components of growth. It is important to note that shift-share analysis cannot offer any explanation as to why changes are taking place. The shift-share method does, however, offer valuable insights into existing trends and is a valuable component to any regional study.

Using the shift-share technique, regional employment growth is broken down into national share, industry mix and regional share. National share is representative of the portion of employment growth in a region that is due to the overall growth of the provincial economy. Industry mix is the portion of employment growth in the region that can be attributed to the mix of industries in a region, and is based on how the overall industry is performing throughout the province. The regional share, or competitive share, is that portion of employment growth due to the unique features of the region such as natural resources, entrepreneurial culture, or other unique characteristics.

Provincial Share Growth

The shift-share method requires a reference area to attribute growth to. While this is commonly referred to as “national growth” or “national share” it can be any reasonably large geography encompassing the regions of interest. Ontario is the reference area used in this report.

Reference Area Growth (Ontario)	
Ontario Growth 1988-1997	**Ontario Growth 1998-2007**
4%	21%

Table 3: Growth in Ontario, the reference area, in 1988-1997 and 1998-2007.

The overall growth in Ontario's employment was 4% from 1988-1997. Over 1998-2007 the employment growth rate increased to approximately 21%.

Industry Mix Growth

The industry mix portion of growth is the share of employment change in an area that can be attributed to the growth rate of the regional mix of industries. It is calculated by examining the difference between provincial industry growth minus overall growth in the reference area, multiplied by the regional industry employment. Measurements of industry mix are based on points from 1988-1997 and have been compared to the period from 1998-2007. Change in total employment is calculated for each industry using the provincial-level industry data.

Regional Share Growth

The regional share, also known as the competitive share of a region, accounts for regional factors capable of affecting employment. This portion accounts for features unique to the region that account for local growth, or a shift in employment.

Industry Mix Growth Rates in Ontario

The following graph shows the industry mix growth rates (Ontario wide industry growth minus national growth) within Ontario for 1988-1997 and 1998-2007.

Table 4 shows industry growth rates for the two periods 1988-1997 and 1998-2007.

Ontario		
Industry	**Industry Mix Growth 1988-1997**	**Industry Mix Growth 1998-2007**
Primary Industries	-20%	-22%
Construction	-11%	24%
Manufacturing	-15%	-24%
Wholesale and Retail Trades	-6%	8%
Transport	5%	-4%
F.I.R.E.	0%	7%
Professional, Science, Tech.	41%	8%
Business & Support Services	52%	21%
Edu.,Health, Public Admin.	3%	7%
Other Services	10%	-3%

Table 4: Ontario industry mix growth rates from 1988-1997 and 1998-2007

Provincially, **primary industries** show strong negative growth in industry mix (-20% and -22%, respectively) across both periods 1988-1997 and 1998-2007. The **construction** industry declined in industry mix growth over the first period (-11%), but has since shown an increase of approximately 24% over the 1998-2007 period. **Manufacturing**, the largest goods producing employer, shows a decline of 15% in industry mix growth in 1988-1997, and a further decline in industry mix growth of 24% in the 1998-2007 period.

The service-oriented industries show a greater increase in industry mix growth. While **wholesale and retail trades** showed slight negative growth (-6%) in 1988-1997, the industry category showed a 8% increase in industry mix growth over the 1998-2007 period. The **transportation** industry employment growth was 5% from 1988-1997, but fell to -4% in 1998-2007. The **finance, insurance, real estate and leasing (FIRE)** category showed no industry mix growth over the first period. In the subsequent period, however, the category showed 7% industry mix growth.

Of the service industries, the **professional, scientific and technical** industry category showed strong industry mix growth in the first period (41%) as well as increasing growth across the 1998-2007 period of 8%. Meanwhile, **business and support services** showed the highest industry mix growth in 1988-1997 of 52%, and continuing positive growth of 21% in 1998-2007.

The **education, health, and public administration** category showed 3% industry mix growth in 1988-1997 and 7% in 1998-2007 periods. The **"other services"** category showed 10% industry mix growth in 1988-1997 but showed a decline in industry mix growth of -3% in the 1998-2007 period.

Toronto Economic Region Growth Rates

Table 5 shows the regional share growth rates for the 1988-1997 period and the 1998-2007 period. Recall that regional share is calculated as the regional industry employment growth minus the growth of the industry provincially.

Toronto		
Industry	**Regional Share Growth 1988-1997**	**Regional Share Growth 1998-2007**
Primary Industries	-14%	16%
Construction	5%	8%
Manufacturing	2%	-3%
Wholesale and Retail Trade	-4%	12%
Transport	9%	4%
F.I.R.E.	-1%	9%
Professional, Science, Tech.	-1%	2%
Business & Support Services	-1%	-10%
Edu.,Health, Public Admin.	1%	2%
Other Services	1%	7%

Table 5: Toronto economic region regional share growth rates, 1988-1997 and 1998-2007 periods

Toronto economic region showed a decline in regional share growth of **primary industries** over 1988-1997 of 14%. However, there was a 16% increase in regional share growth from 1998 to 2007. **Construction** showed increasing regional growth across both periods (5% and 8%, respectively). **Manufacturing** showed only a slight increase of 2% in regional share growth over 1988-1997, and showed a regional share growth of -3% over the 1998-2007 period.

In the service industries, there was a slight decrease (-4%) in regional share growth the **wholesale and retail trade** industry category in 1988-1997. The regional share growth was 12%, however, in the 1998-2007 period. The **transport** industry category regional share growth was 9% in 1988-1997, and decreased to 4% in the 1998-2007 period. **Finance, insurance, real estate (FIRE)** showed -1% growth over 1988-1997 and 9% growth in regional share over the 1998-2007 period.

Professional, scientific and technical services also had a -1% growth in 1988-1997, and positive (2%) growth in the 1998-2007 period following. The traditional shift-share method shows a decrease in **business and support services** over 1988-1997 (-1%) and a -10% regional share growth rate over the 1998-2007 period.

Health, education and public administration showed slight positive regional share growth across both periods at a rate of 1% and 2%, respectively. The **"other services"** category also showed regional share growth across both periods of 1% and 7%, respectively.

Traditional Shift-Share Results in Context

In the pages that follow, the changes in an industry's employment from both periods will be decomposed into the national share, industry mix and regional share portions. The Toronto economic region regional share will also be compared to other Ontario economic regions. A map of the economic regions will graphically display the regional share growth in the Toronto economic region over the 1998-2007 period compared to the other economic regions in southern Ontario.

Goods-Producing Industries

Primary Industries

In the Toronto economic region, overall employment in the goods-producing primary industries of agriculture, forestry, fishing, mining, oil and gas, and utilities decreased overall in the 1988-1997 period by 13,100 jobs. From 1998-2007 there has been an overall increase of 4,600 employed. The changes in employment over both these periods are broken down in tables 6 and 7.

Toronto: Primary Industry			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
1,770	-8,836	-6,034	-13,100

Table 6: Shift-share decomposition of Toronto primary industry employment change over 1988-1997

Provincial employment growth was just 4.1% over the 1988-1997 period. According to the shift-share calculation, this growth accounted for 1,770 jobs in the primary industries. As seen above (table 5), the overall industrial category for primary industries shows a decline over the same period. This weak growth of the industry, through the industry mix of the region, accounts for an overall loss of nearly 8,900 primary industry related jobs in the Toronto economic region over that time, according to the shift-share decomposition.

The negative regional share growth of the primary industry accounts for a further 6,000 jobs lost over the 1988-1997 period. Overall, as table 6 shows, there is a loss of just over 13,000 primary industry related jobs in the Toronto economic region over the 1988-1997 period.

Toronto: Primary Industry			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
6,274	-6,572	4,898	4,600

Table 7: Shift-share decomposition of Toronto primary industry employment change over 1998-2007

Over 1998-2007 the regional share of employment in the Toronto economic region was positive. Job creation due to greatly increased growth in the reference area of Ontario (the “national share”

growth) was canceled out by negative industry mix growth. The regional share for the Toronto economic region is positive and accounted for the net increase in primary industry jobs in the region.

The following graph compares regional share growth over the 1998-2007 period of the economic regions in southern Ontario.

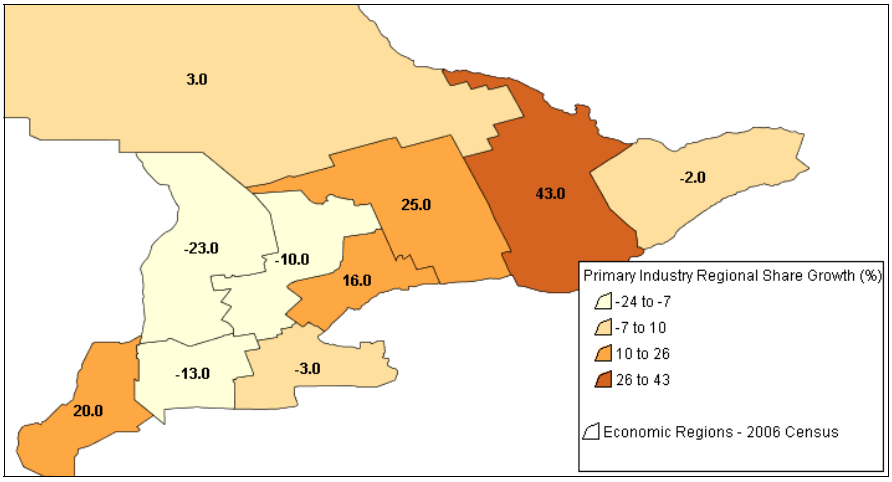

Illustration 5: Primary industry regional share growth rates, in percent, by economic region (1998-2007)

Construction

Over the period from 1988 to 1997, there was a net decrease in construction industry employment in the Toronto economic region. According to the shift-share decomposition, approximately 4,900 jobs were created due to overall Ontario provincial growth. The industry mix effect, however, showed a strong decline (-11%, see table 4) in growth. This decline in industry mix growth accounted for a decrease of approximately -13,200 jobs in the industry. Even though the regional share growth was positive (5%, see table 5) it was not enough to offset the industry mix decline. The overall total change in employment was thus -2,600.

Toronto: Construction			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share +**	**= Total Employment Change**
4,876	-13,247	5,770	-2,600

Table 8: Shift-share decomposition of Toronto construction employment change over 1988-1997

The period from 1998 to 2007 yielded positive overall gains in construction industry employment for the Toronto economic region. The total change in industry employment was close to 62,000 jobs. Of this change, the shift-share methodology attributes approximately 24,400 jobs to overall provincial employment growth, and 27,600 to industry mix effect. The remaining 9,700 jobs can be attributed to regional share growth of 8% (table 5).

Toronto: Construction			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
24,427	27,629	9,743	61,800

Table 9: Shift-share decomposition of Toronto construction employment change over 1998-2007

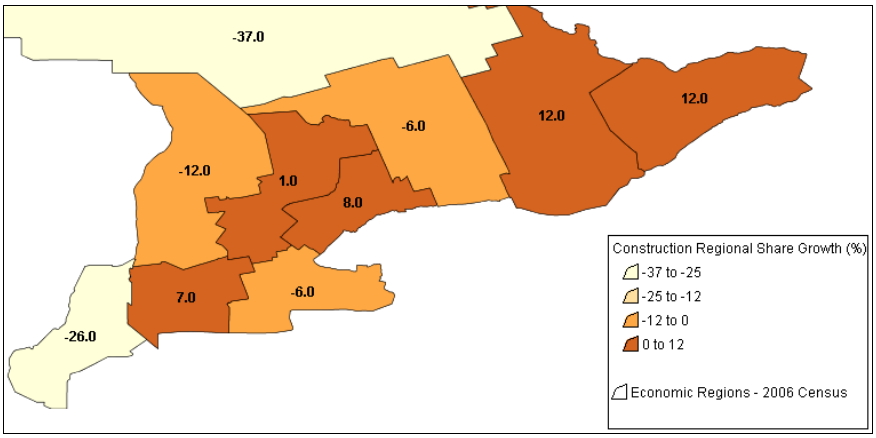

Illustration 6: Construction industry regional share growth rates, in percent, by economic region (1998-2007)

Manufacturing

Over the period from 1988 to 1997, there was a decline in manufacturing industry employment of 41,900 jobs. Of that, the shift-share method attributes a net gain of 19,000 jobs from the growth of the reference area, Ontario. However, the weak industry mix growth (-15%) contributed to the overall job losses. The regional share growth was slightly positive (2%) and contributed approximately 9,700 jobs to the regional total.

Toronto: Manufacturing			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
19,031	-70,660	9,729	-41,900

Table 10: Shift-share decomposition of Toronto construction employment change over 1988-1997

Over the 1998-2007 period, declines in manufacturing employment continued. From 1998-2007, fewer jobs were lost in the manufacturing industry (-26,200 compared to -41,900 jobs). However, the shift-share method attributes the major gain in jobs to be from the increased provincial growth. The industry mix growth continued to decrease over the period (-24%, see table 4), as did the regional share of growth, which declined to -3% (table 5) accounting for approximately 12,400 of the jobs lost in this industry over the ten-year period measured.

Toronto: Manufacturing			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
94,510	-108,335	-12,375	-26,200

Table 11: Shift-share decomposition of Toronto construction employment change over 1998-2007

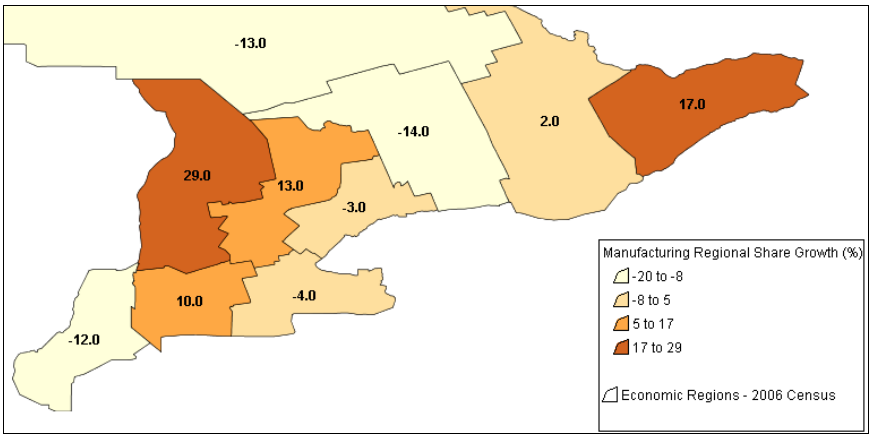

Illustration 7: Manufacturing industry regional share growth rates, in percent, by economic region (1998-2007)

Service Industries

Wholesale and Retail Trade

Over the 1988-1997 period, in the wholesale and retail trades industry category, there was a total decline in employment of 18,000 jobs. Of that, the shift-share calculation attributes close to 15,000 to overall provincial growth. However, a negative industry mix growth translates to a number of jobs lost in the Toronto economic region due to problems facing the trade industry category as a whole. The shift-share calculation attributes a loss of over 20,200 jobs in the industry. Regional share growth for the category is also negative, and contributed a loss of 12,700 jobs to the overall total change in employment.

Toronto: Trade			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
14,961	-20,241	-12,721	-18,000

Table 12: Shift-share decomposition of Toronto trade employment change over 1988-1997

In the recent period, from 1998-2007, all of the components of the shift-share decomposition were positive, and there was a total change in employment in the industry category of 140,700 jobs. Of the total, the shift-share method attributes a gain of 72,500 jobs to the overall growth of the provincial economy. The industry mix growth was also positive over the period (8%, table 4). Industry mix contributed approximately 26,500 jobs to the overall employment change. Finally, the Toronto economic region competitive share growth was 12% (table 5), and contributed over 41,600 jobs to the overall total change.

Toronto: Trade			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
72,550	26,471	41,679	140,700

Table 13: Shift-share decomposition of Toronto trade employment change over 1998-2007

Overall, the wholesale and retail trades industry in the Toronto economic region showed a substantial turnaround in the region's competitive share growth between the two periods measured.

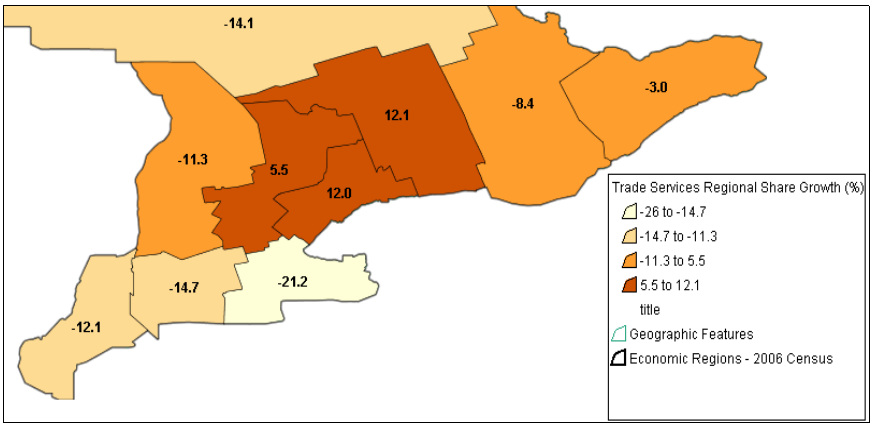

Illustration 8: Trade industry regional share growth rates, in percent, by economic region (1998-2007)

Transport

Over the 1988-1997 period, there was a total change in employment of 17,800 jobs in the transportation industry category. Of that change, the shift-share method attributes 4,100 jobs to provincial share growth. Industry mix growth was 5%, which is a contribution of almost 5,000 jobs due to the increased growth of the industry as a whole. Regional share growth was also positive at 9%, and contributed 8,700 jobs to the overall employment change.

Toronto: Transport			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
4,172	4,929	8,700	17,800

Table 14: Shift-share decomposition of Toronto transport employment change over 1988-1997

More recently, the transportation industry in the Toronto economic region has fared less well. While there was an overall gain of almost 25,000 jobs in the region, there was also negative industry mix growth. The shift-share calculation attributes a contribution of almost 25,000 jobs to the transportation industry due to an overall increase in provincial growth. The industry mix growth was negative (-4%, table 4), however, and resulted in a loss of just over 5,000 jobs.

Toronto: Transport			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
24,971	-5,041	5,069	25,000

Table 15: Shift-share decomposition of Toronto transport employment change over 1998-2007

Regional share growth was positive, and accounted for 5,000 jobs. This effectively countered the job losses due to the poor performance of the transportation industry as a whole.

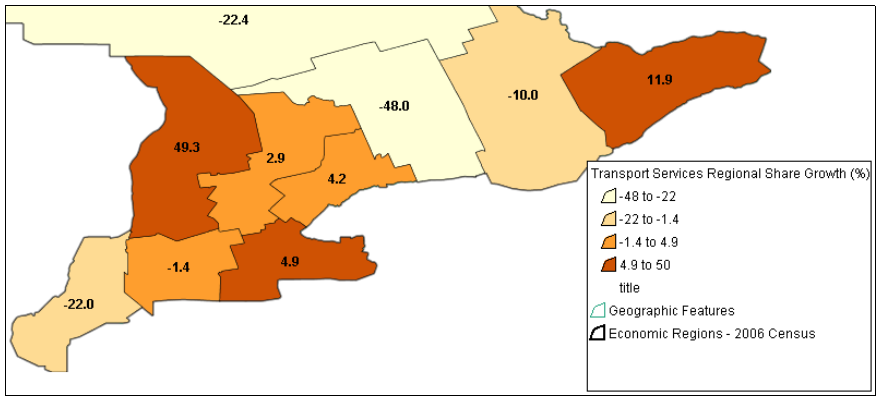

Illustration 9: Transport industry regional share growth rates, in percent, by economic region (1998-2007)

Finance, Insurance, Real Estate (F.I.R.E.)

In the Toronto economic region, finance, insurance and real estate showed a positive overall employment change over the 1988-1997 period of 7,400 jobs. Decomposed by the shift-share method, this corresponds to job growth due to strong provincial growth trends. The industry mix growth was negligible over the period, and the regional share was also slightly negative.

Toronto: F.I.R.E.			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
8,552	-54	-1,098	7,400

Table 16: Shift-share decomposition of Toronto F.I.R.E. employment change over 1988-1997

Employment in the FIRE industry category grew by close to 80,000 jobs from 1998 to 2007. Provincial, or national share, accounted for most of the job growth. Employment growth due to industry mix is calculated to be 7%, accounting for approximately 15,900 jobs. Regional share growth also increased to 9% and accounted for nearly 18,500 jobs of the total number gained.

Toronto: F.I.R.E.			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
45,446	15,868	18,486	79,800

Table 17: Shift-share decomposition of Toronto F.I.R.E. employment change over 1998-2007

Illustration 10 shows the regional share of growth of the FIRE industry over the 1998-2007 period. It is worth noting here that the growth rates must be considered in context with the overall number employed in a region. For example, the high regional share growth (50%) in the Muskoka-Kawarthas economic region indicates a regional share growth consisting of only 2,600 jobs. Meanwhile, the 9% regional share growth in the Toronto economic region is calculated to account for almost 18,500 jobs in the FIRE industrial category. Overall employment in the FIRE industry was 79,800 over 1998-2007, while in the Muskoka region the entire category added just 4,200 jobs.

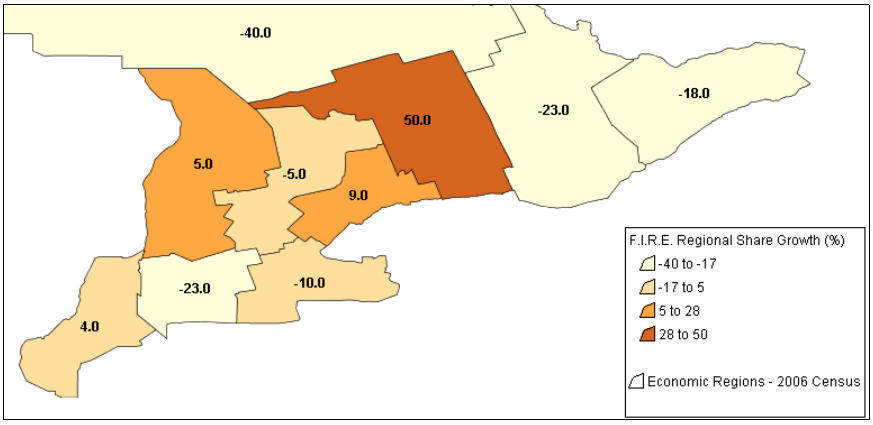

Illustration 10: F.I.R.E. industry regional share growth rates, in percent, by economic region (1998-2007)

Professional, Scientific and Technical Services

Over the period 1988-1997, there was a total employment change of 63,400 in the professional, science and technical services industry. Of this change, national share growth accounted for very little of the employment change. Instead, industry mix was very high (41%, see table 4) and was calculated to account for almost 58,500 jobs in the Toronto economic region. The regional share was slightly negative (-1%) over this period, and represented a slight loss of jobs according to the shift-share calculations.

Toronto: Professional, Scientific, Technical Services			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
5,790	58,496	-886	63,400

Table 18: Shift-share decomposition of Toronto professional, scientific and technical services employment change over 1988-1997

Over the period 1998-2007 there was a total employment change of nearly 67,000 jobs in the professional, scientific and technical services industry category. Of that change, the provincial growth is attributed with a positive contribution of 44,900 industry jobs. Industry mix contributed 17,100 jobs and regional share is credited with nearly 5,000 jobs. Industry mix growth was 8% over the period, and regional share growth was 2% (see tables 4 and 5).

Toronto: Professional, Scientific, Technical Services			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
44,860	17,111	4,928	66,900

Table 19: Shift-share decomposition of Toronto professional, scientific and technical services employment change over 1998-2007

While the Toronto economic region did not have the largest regional share growth, it is worth noting that the region employs over 281,000 people in the professional, scientific and technical industry. This is in contrast to the large regional share growth of the northeast economic region, where the total employment in this industry categories is just over 6,000 people.

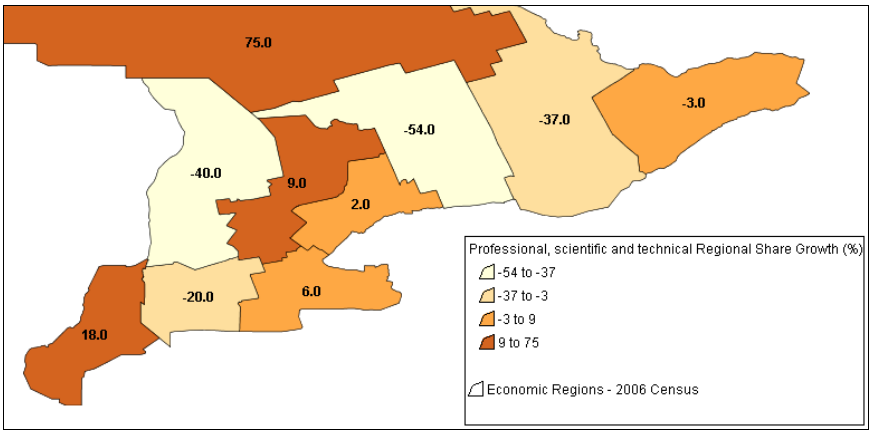

Illustration 11: Professional, scientific and technical industry regional share growth rates, in percent, by economic region (1998-2007)

Business and Support Services

Business and support services employment, as an industry category, saw the creation of almost 37,000 jobs from 1988 to 1997. Of that, approximately 2,700 were due to provincial growth, and approximately 34,700 jobs were due to an industry mix growth rate of 52% over the same period. Regional share growth, according to the shift-share decomposition, actually decreased (-1%) slightly over the period.

Toronto: Business and Support Services			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
2,713	34,698	-510	36,900

Table 20: Shift-share decomposition of Toronto business and support services employment change over 1988-1997

Over the 1998-2007 period, provincial share growth contributed to the total employment change. Industry mix growth over the same period was also positive (21%). However, the regional share growth showed a decline over the 1998-2007 period of -10% or approximately 10,900 jobs.

Toronto: Business and Support Services			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
22,943	23,113	-10,856	35,200

Table 21: Shift-share decomposition of Toronto business and support services employment change over 1998-2007

It should be noted that “business and support services” and “professional, scientific and technical services” industry categories were found to have positive industry mix and competitive share growth for the Toronto economic region as a whole according to the regression analogue of the shift-share method (detailed in the next section). The regression analogue to the shift-share method, makes use of all of the observations from 1988-2007.

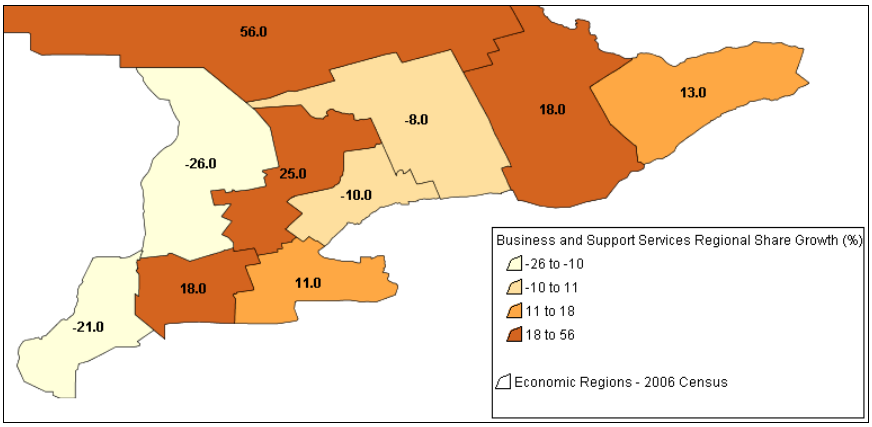

Illustration 12: Business and support services industry regional share growth rates, in percent, by economic region (1998-2007)

Education, Health and Public Administration

Over both periods, all the components of employment calculated with the shift-share methodology were positive for education, health and public administration. Over the 1988-1997 period, total employment in this sector increased by 33,300 jobs. Of that, just less then half (15,500) are attributable to overall provincial gains. The industry mix category also shows a positive growth (of 3%) accounting for almost 13,200 employed in the industry, according to the shift-share decomposition. The regional share for the industry was 1% - translating into an additional 4,600 jobs.

Toronto: Education, Health and Public Administration			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
15,523	13,186	4,591	33,300

Table 22: Shift-share decomposition of Toronto education, health and public administration employment change over 1988-1997

Over the 1998-2007 period, provincial share growth contributed over 90,000 jobs. Over the same period, industry mix growth of 7% increased employment by an additional 31,000 according to the shift-share methodology. Continuing modest regional share growth (2%) contributed approximately 7,400 health, education and public administration jobs to the economic region over the latter period.

Toronto: Education, Health and Public Administration			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
91,080	31,080	7,440	129,600

Table 23: Shift-share decomposition of Toronto education, health and public administration employment change over 1998-2007

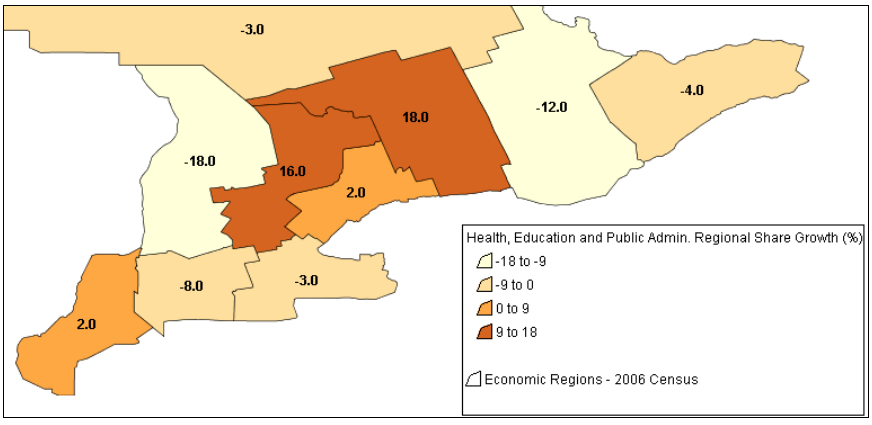

Illustration 13: Health, education and public administration regional share growth rates, in percent, by economic region (1998-2007)

Other Services

The “other services” category includes information, culture and recreation, accommodation and food services, and other miscellaneous services. Over the 1988-1997 period, provincial growth contributed approximately 12,900 jobs to the Toronto economic region. Industry mix growth, at 10%, accounted for approximately 32,000 jobs. Regional share growth in the “other services” industry category was a modest 1%, and accounted for 4,600 of the 49,700 jobs created in the region over 1988-1997.

Toronto: (Other) Services			
Shift-Share Decomposition: 1988-1997			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
12,904	32,157	4,639	49,700

Table 24: Shift-share decomposition of Toronto “other services” category employment change over 1988-1997

Over the period 1998-2007 there was a total of 93,600 more people employed in the “other services” category from the economic region of Toronto. High provincial growth (21%) accounted for approximately 76,500 jobs in the region according to the shift-share calculation. Industry mix growth was negative (-3%) and contributed to a net decrease in jobs. However, regional share growth (7%) added 26,900 jobs to the region.

Toronto: (Other) Services			
Shift-Share Decomposition: 1998-2007			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
76,482	-9,774	26,892	93,600

Table 25: Shift-share decomposition of Toronto “other services” category employment change over 1998-2007

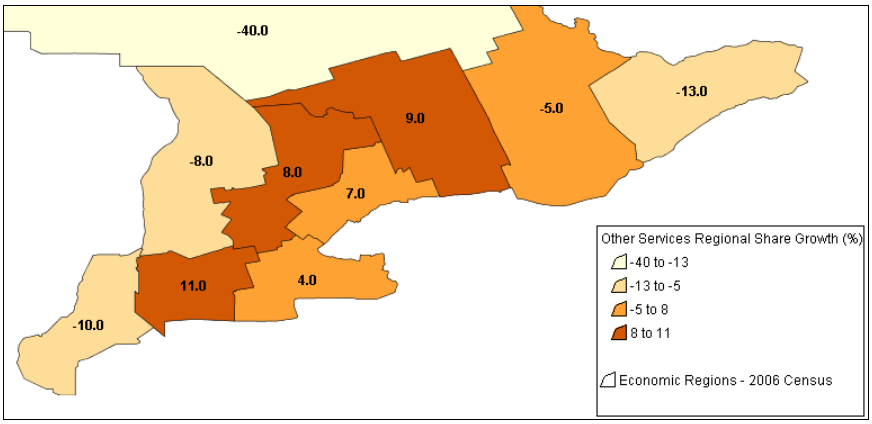

Illustration 14: “Other services” regional share growth rates, in percent, by economic region (1998-2007)

Specific Area Analysis

The broad area analysis was performed using the Labour Force Survey (LFS) data. The observations of industry employment from the LFS are available annually, and the frequency of the observations makes LFS data quite attractive. The drawback of the LFS is that it is not available for geographical units smaller than the “economic region” classification.

The Canadian census does have reliable data available for smaller economic regions. This study makes use of the census division level data. The drawback of the census is that it is essentially a snapshot of the population at a moment of time. While the sample used by the census is large (20% of the population is given the long-form questionnaire of the census), the survey is conducted only once every five years.

By contrast, the LFS runs continuously, and is based on overlapping cohorts of respondents who are interviewed multiple times over a six week period. Data from the LFS is available monthly, and is often used as an input into government policy at all levels. The annual data available from the LFS is an average of these monthly observations over the year.

The differing geographical units, frequency of observations, and basic survey questionnaire mean that the results of the two surveys will not be the same. Generally, however, we can expect the same patterns to emerge given a long enough time period for observations.

Data Sources and Issues

This portion of the report is based on the census because it allows for the examination of smaller geographic regions. The current industry classification system is called NAICS – North American Industry Classification System. This system has been used for the 2001 census as well as the 2006 census, and allows for straightforward comparisons to be made. This report will make use of the shift-share calculations made using the census from 2001-2006.

The 1996 census used the Standard Industrial Classification (SIC) system. NAICS and SIC categorize employment differently. This difference in the systems of classification mean that, even with concordance tables[2] provided by Statistics Canada, data cannot be converted between systems directly without some information loss[3].

For example, the SIC system has a category for "communications and other utility industries". This SIC classification contains employment that falls under the NAICS "utilities" classification (electrical power generation), but also employment that falls under the NAICS headings of "trade and transportation" (postal carriers), "information, culture and recreation" (telecommunications, television and radio broadcasters), and "business, building and other support services" (waste management systems). When the industrial categories of both systems are broad enough, rough equivalents can be found, but some information loss is the inevitable result.

As a result, for the 1996-2006 period, the 1996 census SIC data was converted to NAICS categories. The NAICS category "professional, scientific and technical services" was combined with "business and support services", and "wholesale and retail trade" was combined with "transportation". All of the changes are summarized in the table below:

2 Statistics Canada concordance tables http://www.statcan.ca/english/concepts/industry.htm

3 For greater detail, see http://www.statcan.ca/english/Subjects/Standard/concordances/naics-bckgrnd.htm

Broad NAICS Heading Used in Report	SIC Heading
Primary Industries	Division A - Agricultural and related service industries Division B - Fishing and trapping industries Division C - Logging and forestry industries Division D - Mining (including milling), quarrying and oil well industries
Construction	Division F - Construction industries
Manufacturing	Division E - Manufacturing industries
Wholesale and Retail Trade, and Transport	Division I - Wholesale trade industries Division J - Retail trade industries Division G - Transportation and storage industries
F.I.R.E.	Division K - Finance and insurance industries Division L - Real estate operator and insurance agent industries
Professional, Science, Tech.	No direct equivalent. As a result, this NAICS category was merged with Business and Support services for 1996-2006.
Business & Support Services	Division M - Business service industries
Edu.,Health, Public Admin.	Division N - Government service industries Division O - Educational service industries Division P - Health and social service industries
Other Services	Division Q - Accommodation, food and beverage service industries Division R - Other service industries Division H - Communication and other utility industries

Table 26: Conversion from SIC to broad NAICS categories

With that caveat made clear, this report will make use of the shift-share methodology using employment data from the census from the periods 2001-2006 and 1996-2006. While some caution should be exercised in the interpretation of the 1996-2006 data, it was included in order to show broader trends than the shorter period coverage may be able to display. The accompanying maps will focus on York Region and the surrounding census divisions of Durham, Toronto, Peel, and Halton.

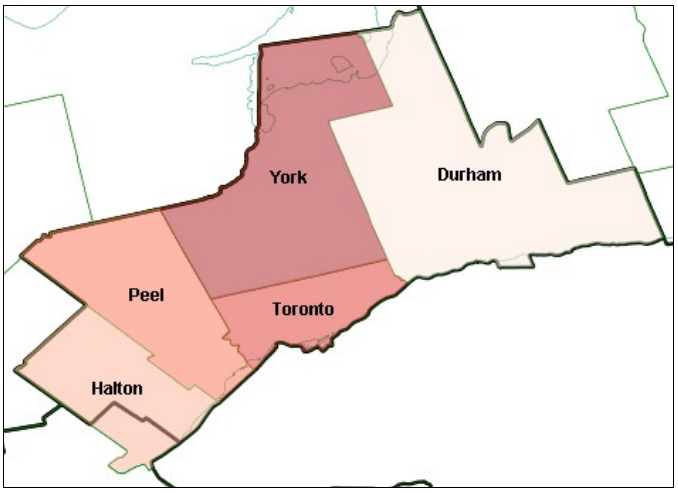

Illustration 15: Census divisions within the economic region of Toronto

York Region

The following graph displays the total employment in each industry category in 2001 and 2006. From 2001 to 2006, total employment grew by almost 22%.

York Region Total Industry Employment 2001-2006			
Industry	**2001**	**2006**	Percent of Total Growth
Primary Industries	5,350	6,140	0.9%
Construction	24,835	31,490	7.8%
Manufacturing	55,235	62,840	8.9%
Wholesale and Retail Trade	74,825	86,175	13.3%
Transport	13,355	16,505	3.7%
F.I.R.E.	37,815	46,350	10.0%
Professional, Science, Tech.	38,920	48,420	11.1%
Business & Support Services	16,320	20,525	4.9%
Edu., Health, Public Admin.	66,460	84,605	21.3%
Other Services	54,610	69,885	17.9%
Total Employed	**387,725**	**472,935**	100%

Table 27: Total industry employment in York Region 2001, 2006

Provincial Growth

Overall employment growth was 8% over the 2001-2006 period, and 10% over the 1996-2006 period.

Ontario Growth 2001-2006	8%
Ontario Growth 1996-2006	10%

Table 28: Reference area growth rates in 2001-2006 and 1996-2006.

Industry Mix Growth

The industry mix over the period 2001-2006 is displayed below. The table shows that these values are broadly similar to the industry mix over the period 1996-2006.

Industry	Industry Mix Growth 2001-2006	Industry Mix Growth 1996-2006
Primary Industries	-8%	-32%
Construction	8%	14%
Manufacturing	-16%	-18%
Wholesale and Retail Trade	-0%	
Transport	2%	1%
F.I.R.E.	2%	16%
Professional, Science, Tech.	2%	
Business & Support Services	13%	72%
Edu., Health, Public Admin.	7%	3%
Other Services	1%	-2%

Table 29: Industry mix growth for periods 2001-2006 and 1996-2006

Note how the longer industry mix derived from the census over the 1996-2006 period is close to the industry mix from the LFS (table 4) over the period 1998-2007.

There is a strong decline in industry mix growth for the **primary industries**. There is a strong increase in industry mix growth for the **construction** industry. Also, in all cases, the decline in industry mix growth for the **manufacturing** industry is evident. The **wholesale and retail trades** and **transportation** industry category shows slight positive growth in the LFS based industry mix. The industry mix calculation from the 2001-2006 census shows no industry mix growth, but the 1996-2006 shift-share industry mix does show some slight growth (1%). **Finance, insurance and real estate (FIRE)** shows some slight increase in the industry mix growth over the 2001-2006 period. Over the longer run, from 1996-2006, positive industry mix growth appears as a more definite trend.

As mentioned in table 26, converting SIC to NAICS, the category "**professional, scientific and technical services**" was aggregated with the "**business and support services**" category. For both the 2001-2006 period and the 1996-2006 period, there appears to be strong industry mix growth for this category. H**ealth, education and public administration** also have positive industry mix growth.

The general "**other services**" industry category shows slight industry mix growth over the short period from 2001-2006, but over the longer period (1996-2006) there is a slight decline in industry mix growth. This is similar to the LFS results for industry mix growth, shown in table 4, where a slight decline in the growth rate is evident.

Regional Share Growth

Overall, the regional share growth in York Region is positive in all categories, including primary industries and manufacturing. Services also show strong positive growth in the region over both periods. Recall that direct comparisons between the periods 2001-2006 and 1996-2006 should be made with caution because of the differing industry classification systems in use over the latter period. Details are in "Data Sources and Issues" section, above.

York Region		
Industry	**Regional Share Growth 2001-2006**	**Regional Share Growth 1996-2006**
Primary Industries	15%	14%
Construction	11%	21%
Manufacturing	22%	45%
Wholesale and Retail Trade	8%	
Transport	13%	28%
F.I.R.E.	12%	37%
Professional, Science, Tech.	14%	
Business & Support Services	5%	31%
Edu.,Health, Public Admin.	12%	31%
Other Services	20%	41%

Table 30: York Region, regional share growth for periods 2001-2006 and 1996-2006

Goods Producing Industries

Primary Industry

Despite weak industry mix growth as recorded from all data sources (tables 4, and 29), regional share growth has been positive for York Region, resulting in an overall gain in employment for the primary industry. However, it should be noted that despite positive growth in provincial share and regional share, the total employment gains have been modest.

Fewer than 1,000 positions were added in the primary industry category over the 2001-2006 period for York Region. The LFS data shows that for the entire Toronto economic region only 4,600 new employment positions were created over the period 1998-2007.

York: Primary Industry			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
422	-429	797	790

Table 31: Shift-share decomposition of York primary industry employment change over 2001-2006

Overall employment in the industry is so low that even a small absolute increase in employment appears as a large growth rate. The primary industry employment category as a whole was responsible for less than 1% of the total employment growth in York Region from 2001 to 2006 (table 27).

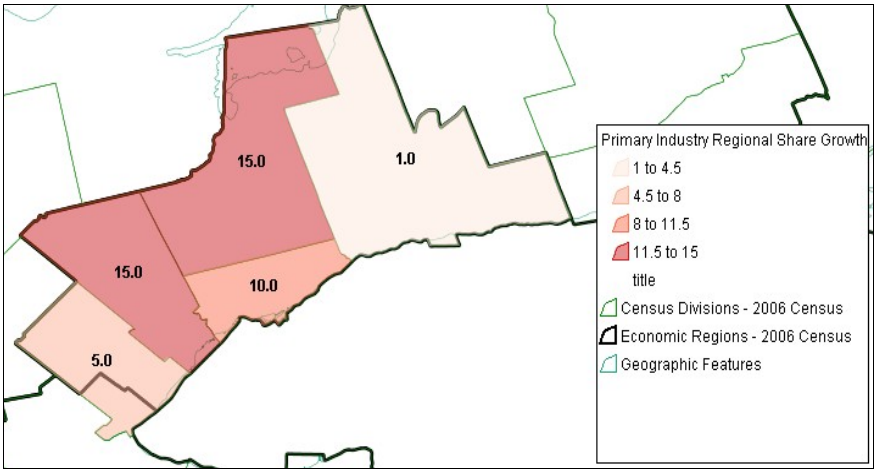

Illustration 16: Primary industry regional share growth rates, in percent (2001-2006)

Construction

The construction industry contributed approximately 8% to York Region's overall employment growth (table 27). The total employment change due to construction was just over 6,500 jobs. Of that, the shift-share method attributes close to 2,000 jobs to the overall provincial growth. Industry mix growth, or how well the overall industry has been performing, is attributed with just over 1,900 of the actual increase in construction industry jobs. Finally, the positive regional share growth (11%, table 30) is responsible for a contribution of over 2,700 jobs according to the shift-share calculations.

York: Construction			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
1,957	1,935	2,763	6,655

Table 32: Shift-share decomposition of York construction employment change over 2001-2006

The regional competitive share can be seen in context with the other census divisions within the economic region of Toronto (illustration 17).

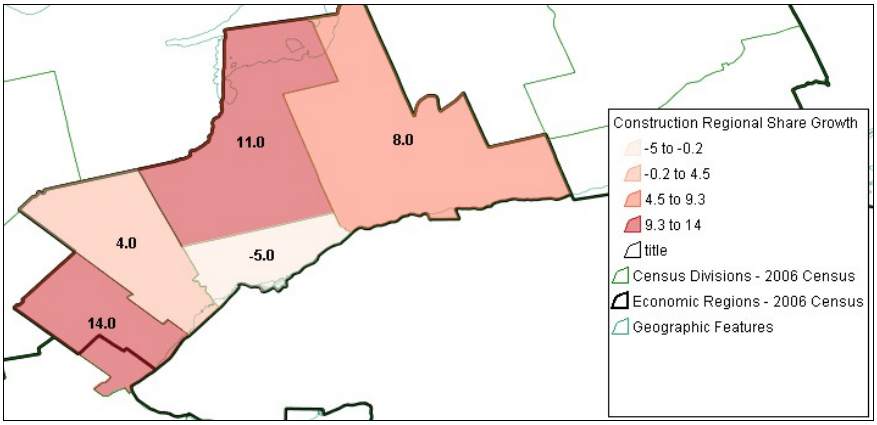

Illustration 17: Construction regional share growth rates, in percent (2001-2006)

Manufacturing

Manufacturing is one of the largest employers in the economic region of Toronto. As can be seen illustration 3, the industry has previously followed what appears to be a cyclical path. Current events with respect to the fortunes of the automotive industry, the high Canadian dollar, and continuing fears of recession in the United States add to the uncertainty of this large industry category.

Of the 7,600 new manufacturing jobs created in 2006 from 2001, the shift-share methodology attributes over 4,300 jobs to overall gains in provincial growth. However, the manufacturing industry category as a whole has done poorly. This is captured in the industry mix portion of the shift-share. The shift-share from 2001-2006 yields a negative industry mix growth of -16% due to the overall decline in this industry category, which translates to an overall loss of -9,000 jobs. However, manufacturing industry employment in the region of York has largely "bucked the trend" and has added jobs in the manufacturing industry category.

York: Manufacturing			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
4,353	-8,959	12,212	7,605

Table 33: Shift-share decomposition of York manufacturing employment change over 2001-2006

The competitive share growth is calculated to be 22% over the 2001-2006 for the region of York. (Using the 1996-2006 data, the regional share growth is calculated to be 45%.) In the 2001-2006 period, the shift-share method attributes approximately 12,200 new jobs in the manufacturing industry to the competitive share of the region.

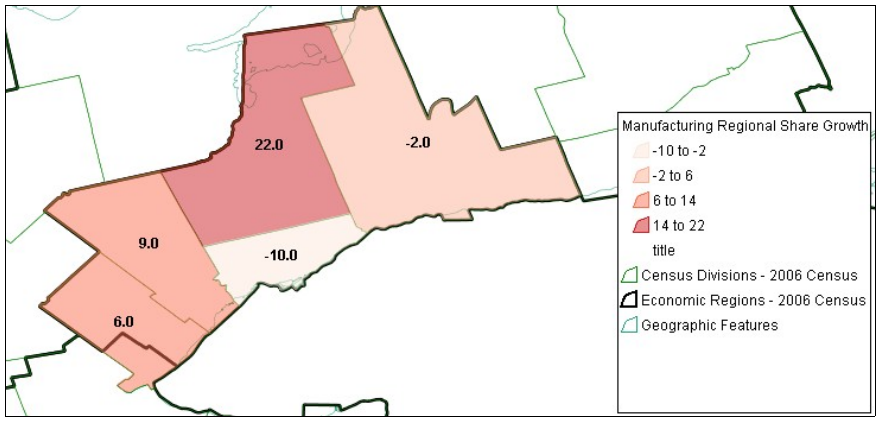

Illustration 18: Manufacturing regional share growth rates, in percent (2001-2006)

Service Industries

Wholesale and Retail Trade

The trade industry category, which includes wholesale and retail trade, accounts for just over 13% of the overall employment growth in York Region (table 27). The industry was responsible for the creation of approximately 11,300 new positions over the period from 2001 to 2006.

The shift-share methodology attributes close to 5,900 jobs of the total change in employment to the national share growth, or the overall growth in the province. Industry mix was quite weak over the period and accounted for a slight loss of just over 200 jobs. However, over the 1996-2006 period, industry mix for the trade industry was -7%.

York: Wholesale and Retail Trade			
Shift-Share Decomposition: 2001-2006			
National Share +	**Industry Mix +**	**Regional Share +**	**= Total Employment Change**
5,896	-247	5,693	11,343

Table 34: Shift-share decomposition of York trade employment change over 2001-2006

Competitive share growth of the region (approximately 8%, see table 30) contributed close to 5,700 jobs to the overall employment change, according to the shift-share method.

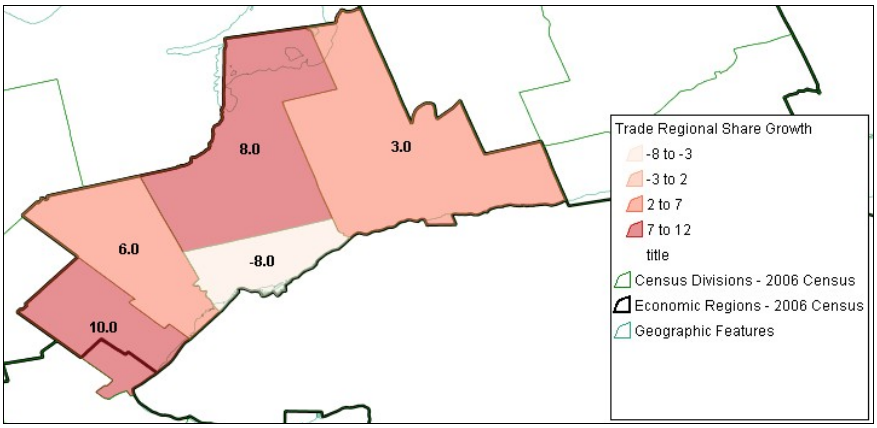

Illustration 19: Trade regional share growth rates, in percent (2001-2006)

Transport

The transportation industry accounted for a total employment change of just over 3,100 jobs from 2001 to 2006. Overall, this industry category accounted for 3.7% (table 27) of the total employment growth in York Region.

According to the shift-share method, national growth, at 8%, accounts for just over 1,000 of the jobs gained in the industry. The industry mix was also weak, at 2% (table 29), and accounted for just over 300 jobs of the total employment change by the shift-share method.

York: Transport			
Shift-Share Decomposition: 2001-2006			
National Share +	**Industry Mix +**	**Regional Share +**	**= Total Employment Change**
1,052	314	1,782	3,149

Table 35: Shift-share decomposition of York transport employment change over 2001-2006

Regional share growth for the transport industry was 13% over the 2001-2006 period, and so accounted for close to 1,800 jobs created of the total employment change.

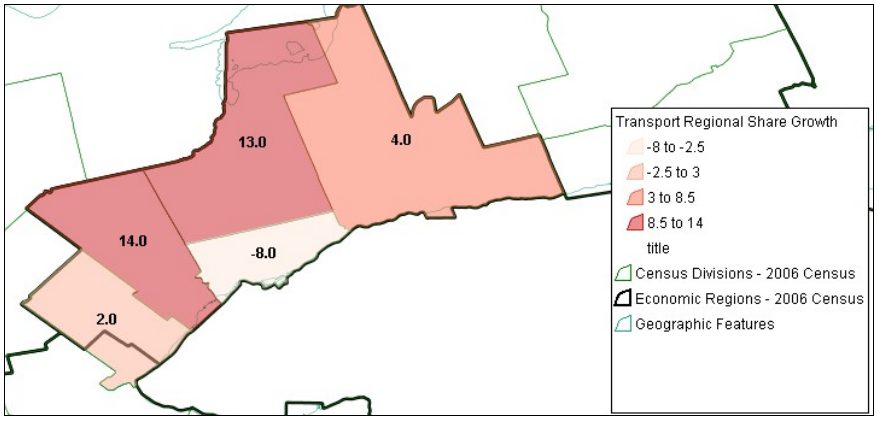

Illustration 20: Transport regional share growth rates, in percent (2001-2006)

Finance, Insurance and Real Estate

The finance, insurance and real estate industry category contributed 10% to York Region's employment growth between 2001 and 2006 (table 27), with a total contribution of over 8,500 new jobs in the region over that period.

According to the shift-share methodology, nearly 3,000 of the 8,500 new employment positions created can be attributed to provincial share growth over the 2001-2006 period. Industry mix, a measure of the overall growth of the industry in question less the growth of the reference area, accounts for just over 900 jobs according to the shift-share methodology.

York: F.I.R.E.			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
2,980	938	4,617	8,535

Table 36: Shift-share decomposition of York FIRE employment change over 2001-2006

The regional share growth of F.I.R.E. is positive, and the shift-share method attributes over 4,600 of the new jobs created to the competitive share of the region of York. The general trend of these numbers is echoed in the ten year shift-share with data from 1996-2006.

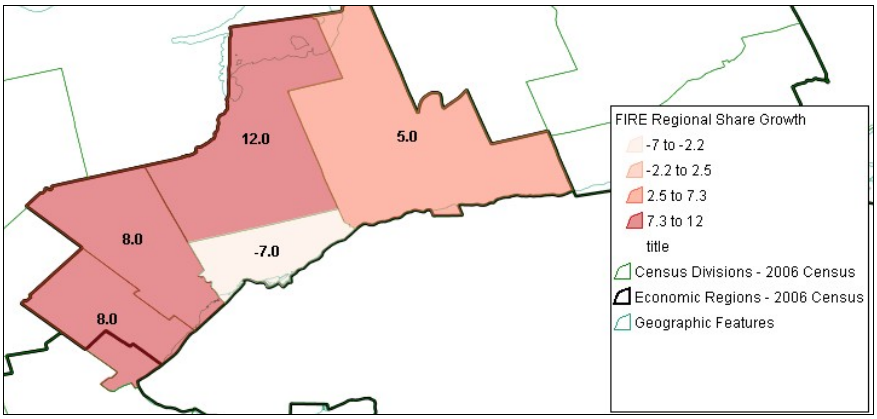

Illustration 21: F.I.R.E regional share growth rates, in percent (2001-2006)

Professional, Scientific and Technical

Employment growth in the professional, scientific and technical industry category accounted for 11% of the total job increase from 2001 to 2006 (table 27). Total employment change over that period was 9,500 jobs. Of those new jobs, the shift-share methodology attributes over 3,000 to overall provincial growth. The industry mix component was attributed with under a thousand. Industry mix growth was 2% from 2001 to 2006.

Over the ten year term there is no information about this industry category for York Region because the 1996 census did not have a direct equivalent category (see table 26). Instead, for the ten-year period from 1996-2006, the appropriate data was merged with business and support services.

York: Professional, Science & Technical			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
3,067	942	5,491	9,500

Table 37: Shift-share decomposition of York professional, scientific and technical employment change over 2001-2006

Competitive share growth in the region of York is 14%, which means the shift-share method attributes nearly 5,500 of the total employment change to local advantage.

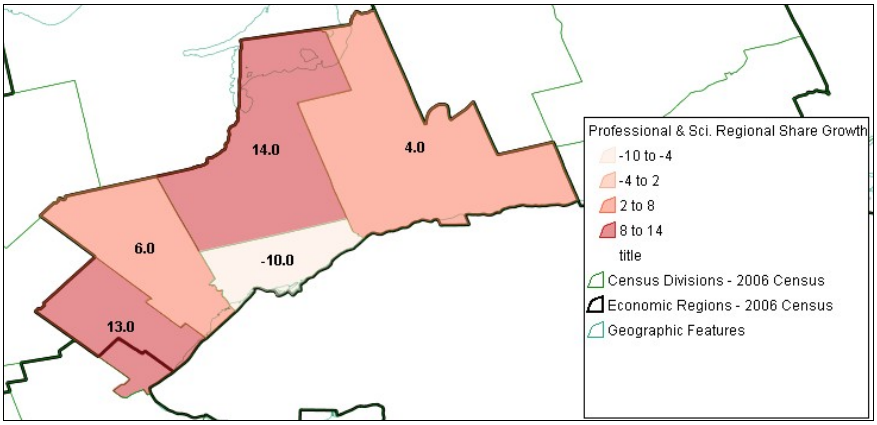

Illustration 22: Professional, scientific and technical regional share growth rates, in percent (2001-2006)

Business and Support Services

From 2001 to 2006, business and support services accounted for approximately 5% of York Region's total employment growth. The total change in employment was 4,200 jobs, of which overall provincial growth was responsible for nearly 1,300 jobs, according to the shift-share methodology. A positive industry mix, the growth of the industry over the period less the overall provincial rate of growth, is considered to have added close to 2,100 jobs.

York: Business and Support Services			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
1,286	2,099	820	4,205

Table 38: Shift-share decomposition of York business and support services employment change over 2001-2006

The regional competitive share growth is 13% over the period 2001-2006. This growth translates an addition of 800 jobs to the total employment change.

It is worthwhile noting that the ten-year period from 1996-2006 shows industry mix and regional share growth to be substantially higher (72% and 31%, respectively). As discussed, the 1996 industrial classification system is different from the one currently in use, which has had the result that the industry classifications over this period should be compared with caution. In this case, the category for business and support services from 1996-2006 also contains much of the employment from the NAICS “professional, scientific and technical” employment category. Tables 29 and 30 should be read with this in mind.

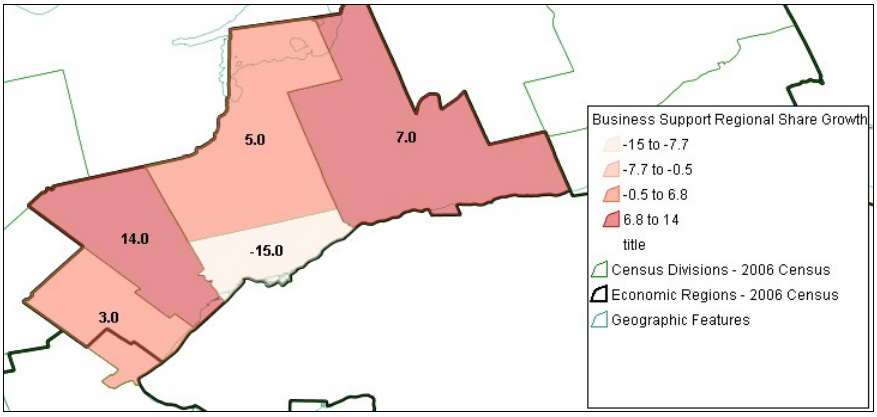

Illustration 23: Business and support services regional share growth rates, in percent (2001-2006)

Education, Health and Public Administration

The education, health and public administration employment category accounted for approximately 21% of the total regional employment growth (table 27). Over the period 2001-2006, total employment rose by 18,145 jobs. Of that change, the shift-share methodology attributes approximately 5,200 jobs to overall provincial growth. Industry mix over the period was 7%, and accounted for just over 4,600 of the jobs created.

York: Education, Health, Public Administration			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
5,237	4,646	8,262	18,145

Table 39: Shift-share decomposition of York education, health and public administration employment change over 2001-2006

The competitive share growth regionally was 12% over 2001-2006. This contributed over 8,200 jobs to the total employment change, according to the shift-share methodology.

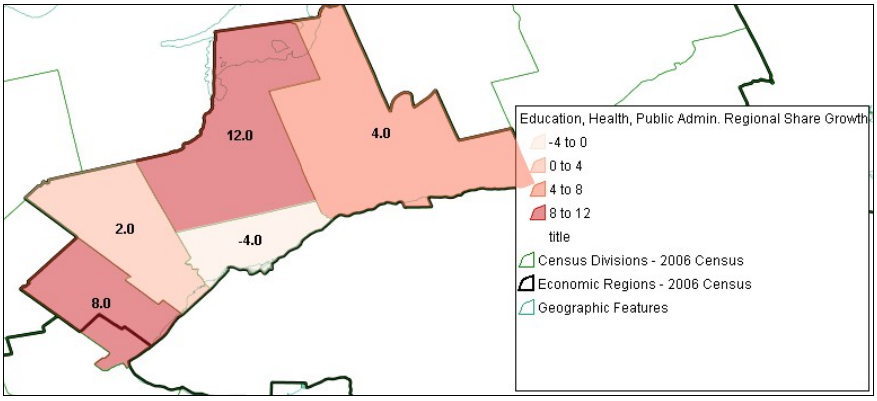

Illustration 24: Education, health and public administration regional share growth rates, in percent (2001-2006)

Other Services

The change in employment in the “other services” industry accounted for 18% of the region's total employment growth from 2001-2006. The total employment change in the services industry classification was 15,275 over 2001-2006. Of that, provincial growth accounted for 4,300 jobs, according to the shift-share method. Industry mix, or the growth of the industry less the growth of the reference area, was just 1% in 2001-2006. This industry mix growth accounted for approximately 300 jobs.

York: Other Services			
Shift-Share Decomposition: 2001-2006			
Provincial Share +	**Industry Mix +**	**Regional Share**	**= Total Employment Change**
4,303	295	10,677	15,275

Table 40: Shift-share decomposition of York services employment change over 2001-2006

Competitive share growth was 20% over 2001-2006, and contributed nearly 10,700 jobs to the total employment change.

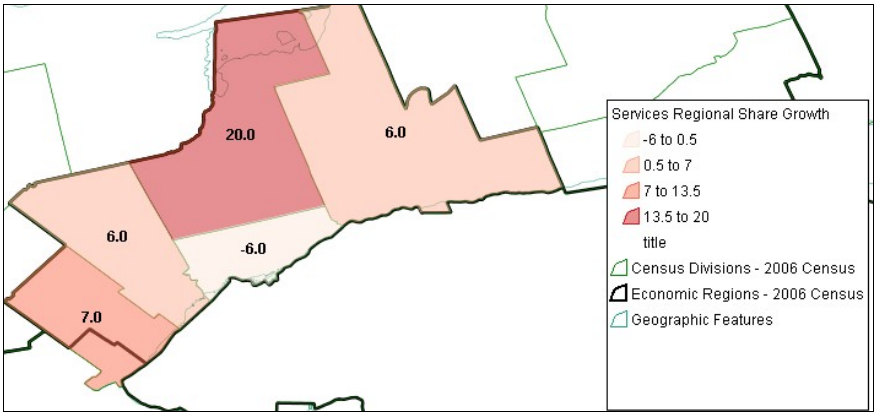

Illustration 25: Services regional share growth rates, in percent (2001-2006)

Conclusions

Broad Area Analysis – Toronto Economic Region

This study has been divided into two main sections. The first section contains is the broad area analysis that makes use of Statistics Canada's Labour Force Survey (LFS). As mentioned, the chief advantages of the LFS is that data is available on a yearly basis, and the series is available from 1988 to 2007. The drawback of the LFS is that the reference area used is the Toronto economic region, which contains the municipalities of Halton, Peel, Durham, Toronto, as well as the region of York.

The **primary industry** category is the total number of jobs in agriculture, mining, and utilities. The most striking feature of the primary industry category is the small share of regional employment growth it has contributed to. From 1998 to 2007 the primary industry category as a whole has contributed less than 1% of the new employment gained in the Toronto economic region. According to the LFS, this is approximately a gain of 4,600 jobs in the entire Toronto economic region.

As the industry mix growth rates show strong negative growth across the province, with growth rates of -20% in 1988-1997, and -22% in 1998-2007. Over the 1998-2007 period, there is a regional share growth of 16% for the Toronto economic region as a whole. However, the absolute number of new employment positions created from 1998-2007 in this industry pales in comparison to all other industry categories.

The **construction** industry category has experienced tremendous employment change over the 1998-2007 period. Construction industry mix growth for the Toronto economic region has been higher than any other industry category (24%). While the employment gains of the construction industry category has been impressive, the prospects for future growth should be considered in light of the current economic challenges.

Manufacturing has traditionally been the driver behind Ontario's growth. However, the industry has had a difficult time over the past twenty years. As shown in this report, industry mix growth for manufacturing has been negative over both the periods measured from 1988-1997, and 1998-2007. However, it would be premature to write the manufacturing industry off.

First, it is worthwhile to examine illustration 3, and note that employment for manufacturing has followed a cyclical path. While the periods studied for this report show negative growth, the outcome would be much different if the period for study was 1994-2004; over this period manufacturing employment in the Toronto economic region increased from less than 400,000 to more than 500,000. This is one of the limitations of the traditional shift-share method: the start and end periods chosen for analysis can sometimes obscure non-linear trends.

Regardless, it is clear that the manufacturing industry is currently experiencing an overall decline in employment. In 1998, manufacturing employed 451,000 people in the Toronto economic region. As mentioned, industry employment peaked between 2002-2004, at over 500,000. By 2007, the number of employed in the Toronto economic region declined again to 426,000.

Despite all the set-backs in the manufacturing industry, it remains the fourth largest employment category in the Toronto economic region. While the broad area analysis shows a decline in regional share growth in the Toronto economic region for the manufacturing industry category, the census data

shows a positive competitive share for manufacturing in the region of York. This will be discussed in greater detail below.

The **wholesale and retail trade** category encompasses employment engaged primarily in wholesaling and retailing and the various supporting services related to these endeavours. Employment in this category has grown strongly in the most recent period, from 1998-2007. Over 165,000 jobs were created in the Toronto economic region over that period, making the trade category the second largest by total employed (see table 2). Both industry mix growth and competitive share economic growth rates are positive for trade in the economic region of Toronto.

While the trade industry category is responsible for a large percentage of the total employment growth in the Toronto economic region from 1998-2007, it is important to keep in mind the breadth of businesses encompassed by this industrial category. (See NAICS 2007 definition in references.)

The **transport** industry category contributed a modest share to overall employment growth in the Toronto economic region from 1998-2007. The transport industry is concerned with the transportation of goods and people by road, rail, water and rail. It is also generally concerned with the warehousing of goods. The transport industry category showed a decline in industry mix growth over 1998-2007. However, in the economic region of Toronto, there is a positive competitive share for the period.

The **education, health and public administration** category has positive industry mix growth in the 1998-2007 period, and also a very slight positive regional share growth. However, employment in this industrial category is largely controlled by the various levels of government.

The **"other services"** industry category includes information, culture, recreation, accommodation and food services, as well as other miscellaneous services. Again, this is a very broad industry category.

The **finance, insurance, and real estate (FIRE)** industry category has shown positive industry mix and competitive share growth for the Toronto economic region as a whole. From 1998-2007, almost 80,000 new employment positions were created in this industry category within the Toronto economic region.

Professional, scientific and technical services is another industry category which recently (1998-2007) has shown strong industry mix growth, and competitive share growth in the Toronto region. This industry category was also responsible for approximately 11% of the growth in the Toronto economic region over 1998-2007.

Business and support services showed strong industry mix growth from 1998-2007, but a negative competitive share growth for the Toronto economic region.

Specific Area Analysis – York Region

Census data was available that specifically targeted the Regional Municipality of York. Taken in context with the broad area analysis (above) this portion of the report is extremely interesting. However, caution should be exercised because the most recent census data is from 2006. More details about the data used in this section can be found in the "Data Sources and Issues" portion of the report.

York Region is in the enviable position of having positive competitive share growth for all industry categories used in this report (see table 30). While the regional share growth is very important, the industry categories should be evaluated based on a variety of criteria. For example, the industry mix growth should be evaluated at the same time. Depending on the goals of the analyst, the overall employment of the industry should also be taken into account.

Much like the broad area analysis, **primary industry** in the York Region shows very little potential for exploitation if increasing employment in the municipality is the only end goal. From 2001-2006, the total employment change in the primary industry category for York Region was just 790 new positions created. Total primary industry employment in the region was just 6,140 positions in 2006.

The **construction** industry category showed a total employment change of over 6,600 jobs over the 2001-2006 period. Both industry mix growth and competitive share growth in the region were positive over 2001-2006.

The **manufacturing** industry category in York Region shows impressive competitive share growth (22% from 2001-2006, and 45% from 1996-2006), despite poor industry mix growth in the province as a whole. Over both periods, the competitive share growth was the highest rate for all industries in the region. The manufacturing industry in the region also employs a substantial portion of the working population. In 2006, approximately 13% of people in York Region were employed through the manufacturing industry category.

Manufacturing faces many challenges: the high Canadian dollar, problems facing North American automotive manufacturers, high energy prices, and lingering fears of recession in the USA all contribute to an uncertain future for the industry. The challenges to the manufacturing industry category are reflected in the negative industry mix growth, shown for all periods.

The **wholesale and retail trade** industry category has shown competitive share growth in York Region, despite slight industry mix growth declines in 2001-2006.

The **transport** industry category also showed positive regional growth, and a low, but positive, industry mix growth. Although this industry showed a high regional share growth, it is the second-smallest industry category by both absolute size and by percentage share of overall regional employment growth.

Education, health and public administration in the region have experienced positive growth over 2001-2006. For the purposes of this report, however, this industry category is of little interest because, as mentioned, employment in this industry category is directly controlled by the various levels of government.

The **"other services"** category shows the second highest regional share growth in 2001-2006 and 1996-2006, after manufacturing. Over the longer term the industry mix growth shows slight negative growth over 1996-2006.

In 2006, **finance, insurance, and real estate (FIRE)** employed 46,000 people in York Region. This category also includes activities related to leasing. Slight industry mix growth over 2001-2006, and strong regional growth make FIRE another growing industry category.

The **professional, scientific and technical industry** category also shows slight industry mix growth over the 2001-2006 period, but has large positive competitive share growth rates in the regional share growth. In 2006 in York Region, over 48,000 people were employed in this industry category.

The **business and support services** industry category shows some promise in the region of York as well. Industry mix growth is positive and high (13% in 2001-2006), and the competitive share for the region is also positive (5%). In 2006, business and support services employed approximately 20,000 people in York Region.

This report has highlighted employment trends for the Toronto economic region with annual data from 1988-2007. Data specific to the Regional Municipality of York was drawn from the 1996, 2001 and 2006 Canadian census reports. Due to the current economic atmosphere of uncertainty the reader is cautioned to take current economic trends into account when analyzing this report, and creating regional policy. In particular, the the broad shift-share analysis should be used as a complement to the specific York regional shift-share analysis. The overall contribution made to regional employment by an industry category should also be considered in addition to the competitive share growth and the industry mix growth.

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Appendix 1: Toronto Economic Region Employment, B&W Charts

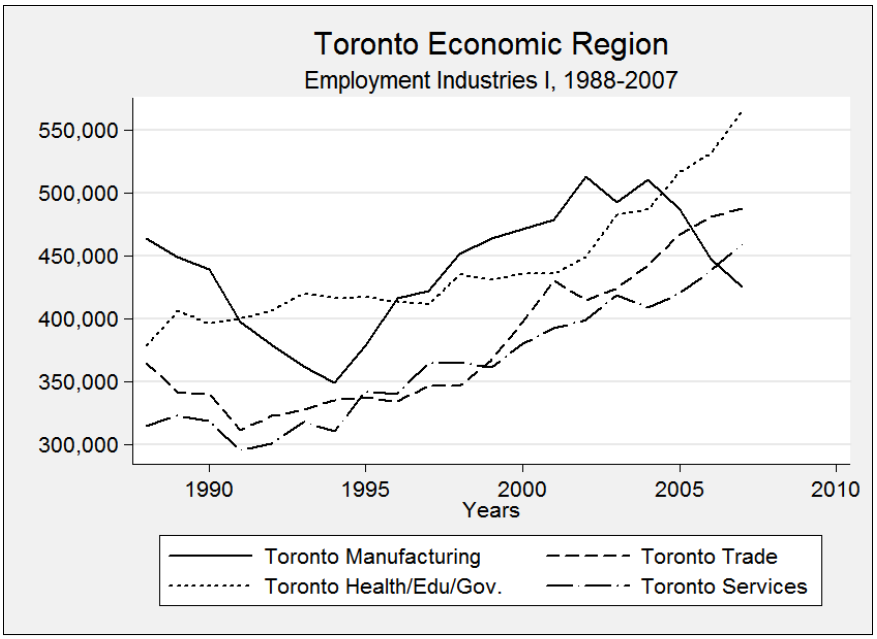

Illustration 26: Employment by industry I in Toronto economic region 1988-2007

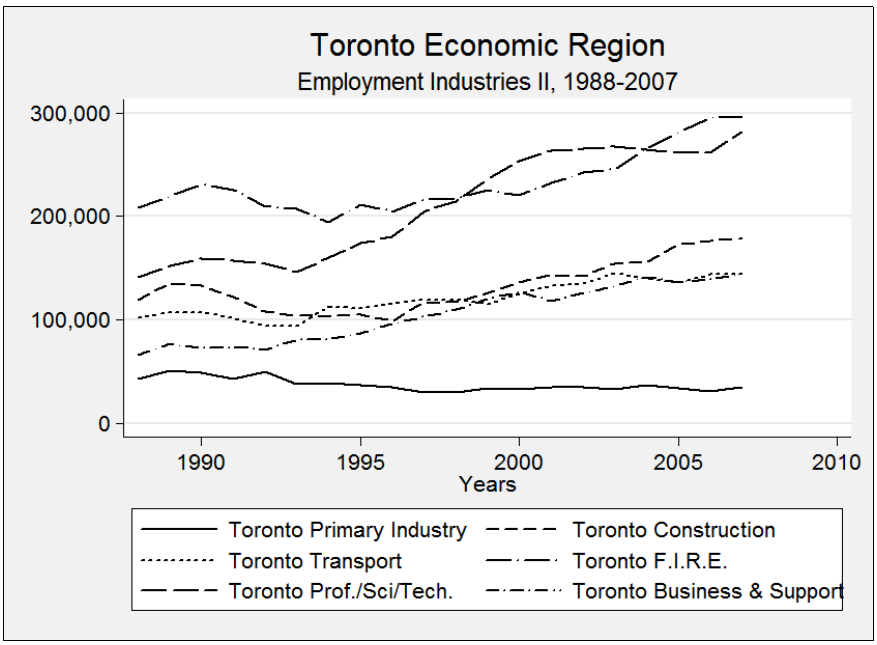

Illustration 27: Employment by industry II in Toronto economic region 1988-2007