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### Manufacturing Firms in Rural and Small Town Canada

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#### **Highlights**

- Within rural and small town areas, 5% of the firms are manufacturing firms, slightly lower than the 6% share of firms that are manufacturing firms in larger urban centres.
- Two-thirds of the rural and small town manufacturing firms are part of the value chain of a resource sector. This is compared to larger urban centres where one-half of the manufacturing firms are part of the value chain of a resource sector.
- Between 2003 and 2007, the number of manufacturing firms in Canada declined by 6%. The decline in rural and small town areas (-7%) was slightly more than the decline in larger urban centres (-6%).
- The further the community was from a larger urban centre, the larger was the rate of decline of the number of manufacturing firms.
- In rural and small town areas, the number of manufacturing firms declined more rapidly in resource-reliant communities than in non-resource-reliant communities.



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- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the <u>Statistics Act</u>
- E use with caution
- F too unreliable to be published

#### Introduction

Since 1976 in Canada, the level of manufacturing employment reached historically high levels in 1980 and 1981 (2.1 million workers) and again in 1989 (2.1 million workers) and again in 2004 (2.3 million workers) (Beshiri, 2010). However, manufacturing employment, as a percent of total employment, has declined over time. At each historically high level, the share of the Canadian workforce employed in manufacturing was lower (1981: 19%; 1989: 17%; 2004:14%). In 2008, overall manufacturing employment had declined to 2.0 million workers. This level is similar to the level at the end of the 1970s but this level of employment now represents 12% of Canada's workforce (Bernard, 2008).

Manufacturing jobs may be one of the few opportunities for rural communities wishing to pursue rural development (Freshwater, 2003). This is because rural areas are shedding primary-sector jobs and higher-order service jobs (such as architects, corporate lending officers, etc.) necessarily need to be located in areas with an adequate critical mass of population (i.e. metro centres). Thus, local initiatives to bolster manufacturing jobs may be one of the few proactive strategies available to rural development authorities.

However, little is known of the number and characteristics of manufacturing firms in rural and small town areas.

The objectives of this study are:

- to examine the recent changes in the number and types of manufacturing firms in rural and small town areas;
- to specifically identify the number and change in manufacturing firms that are part of the value chain of a resource sector (agriculture, forestry, fisheries, mining and oil and gas); and
- to examine the number and change in manufacturing firms located in rural resource-reliant communities (i.e. communities reliant on the value chain of a resource sector).

The short time period of the study, from 2003 to 2007, is designed to minimize the impact of changes of geographic coding of firms and to concentrate on the recent declines in employment in Canada's manufacturing sector. Throughout the study, firms will be disaggregated into various size categories based on the number of full-time equivalent employees.

### **Background:** the context

In an earlier bulletin, Rothwell (2010) reviewed the pattern of business establishments in rural and small town (RST) Canada (The geographic definitions are outlined in Box 2). Firms in RST Canada were smaller, in part reflecting the dispersed nature and smaller size of rural communities. RST Canada had more firms per 10,000 inhabitants than existed in larger urban centres – largely due to the larger share of firms with 1 to 4 employees in RST Canada.

In 2007, there were 11,519 manufacturing firms in RST Canada, representing 19% of Canada's total number of 59.840 manufacturing firms. Within RST Canada, manufacturing firms were more likely to be located in Strong Metropolitan Influenced Zones (MIZ) and Moderate MIZ. Moreover, it was the smaller manufacturing firms (1 to 4 employees) that were somewhat more likely to located in Strong MIZ whereas manufacturing firms with 50 or more employees were more likely to be in Moderate or in Weak MIZ.

RST Canada has been losing manufacturing jobs since 2003. This mirrors the pattern of decline in larger urban centres (LUC) since 2004 (Beshiri, 2010).

## Our approach

We use Statistics Canada's Business Register to obtain a count of firms. We consider only firms with some employees (Box 1). Firms are classified according to size, using the number of 'full-time' equivalent employees.

We use the data for 2003 and 2007. The Business Register has used the 2001 geographic coding for its data for each of the

five years from 2003 to 2007<sup>1</sup>. Thus, we can compare the number of firms within consistent geographic boundaries. The beginning of this period approximates the peak year in manufacturing employment and, as a result, we can document the change in manufacturing firms from 2003 to 2007.

Our geographic grid refers to "larger urban centres" (LUC) which are census metropolitan areas (CMAs) and census agglomerations (CAs) (Box 2). Rural and small town (RST) areas refer to areas outside CMAs and CAs. RST areas are disaggregated into census metropolitan area and census agglomeration influenced zones (MIZ) which proxy the degree of interaction with a LUC.

<sup>1.</sup> Firms in the 5-year period from 1998 to 2002 were coded to the 1996 geographic structure, firms in the 5-year period from 2003 to 2007 were coded to the 2001 geographic structure and starting in 2008, firms were coded to the 2006 geographic structure.

#### **Box 1: Data sources and definitions**

#### The firm

The data on firms were taken from Statistics Canada's Business Register. The Business Register comprises a list of all active businesses in Canada that have a corporate income tax (T2) account or are an employer or have a GST account with an annual gross business income of over \$30,000. This paper excludes establishments that do not maintain an employee payroll even though these establishments may have a workforce of contracted workers, family members or business owners. This was done because the Business Register does not ascribe a size (in terms of employee numbers) to these establishments. This criterion for sample selection also means that the self-employed who do not have any employees are excluded from this study.

Note that the Business Register has coded firms for each year from 2003 to 2007 according to the 2001 geographic structure (Box 2). Hence, our analysis focuses on the 2003 to 2007 period to be able to show the structure and the change of firms within constant geographic boundaries.

#### **Manufacturing firms**

A manufacturing firm is an enterprise classified according to the North American Industry Classification System (NAICS) as having their main activity to be manufacturing. Specifically, these are all the NAICS codes in the 2-digit groups of 31, 32 and 33. For details, see Statistics Canada (2007).

#### Size of firm

Firms are divided into size categories according to the number of persons they employ. The number of employees is estimated from data on payroll remittances and the estimated number of employees is reported in terms of "full-time equivalents." This is the approximate number of employees if each employee worked a full-year. For instance, 10 full-time equivalents could represent 20 employees who each worked for half a year, or any similar combination. The Business Register makes this calculation by dividing the amount of the total payroll by the average pay of the employees.

## **Box 2: The geography**

**Larger urban centres** comprise both census metropolitan areas (CMAs) and census agglomerations (CAs)

In this bulletin, we use the 2001 delineation of larger urban centres and rural and small town areas because the firms on the Business Register are coded to the 2001 geographic grid for the 2003 to 2007 period.

A **census metropolitan area** (CMA) (according to the 2001 delineation) has an urban core with a population of at least 100,000;

A **census agglomeration** (CA) has an urban core population of 10,000 to 99,999.

Both CMAs and CAs include all neighbouring municipalities where 50% or more of the workforce commutes to the urban core.

Rural and small town (RST) areas comprise towns or municipalities outside CMAs and CAs. These RST areas are disaggregated into four census metropolitan area and census agglomeration influenced zones (MIZ) based on the size of commuting flows of the labour force to any CMA or CA. The Strong MIZ category comprises areas where 30% or more of the labour force commute to a larger urban centre. The Moderate MIZ category comprises areas where between 5% and 29% of the labour force commute to a larger urban centre. The Weak MIZ category comprises areas with a commuting flow of more than 0% and less than 5%. The No MIZ category comprises those areas where no individuals commute to a CMA/CA. The strength of commuting flows between rural areas and urban centres serve as a proxy for the degree of economic and social linkages between a rural area and a larger urban centre.

For further information on MIZ, see McNiven et al. (2000).

It should be noted that because the RST areas in the three Territories are classified solely as "Non-CMA/CA Territories," with no disaggregation into MIZs, businesses located in Yukon, Northwest Territories and Nunavut are excluded from this study.

**Resource-reliant communities** are defined by Natural Resources Canada (2001) to be census subdivisions (i.e. incorporated towns and municipalities) where 30% or more of their economic base is generated from the value chain of one of the resource sectors (agriculture, fishing, forestry, mining and energy). The economic base is estimated as an income-weighted level of employment that is attributable to producing goods and services above the needs of the community and is thus available for export from the community (to international markets or other domestic markets). The details of the delineation are provided in Appendix C.

In 2001, 37% of the census subdivisions in RST areas were "resource-reliant communities" (Appendix C, Table C.1). These resource-reliant communities contained 53% of the RST population.

#### **Results**

In 2007 at the Canada level, there were 60 thousand manufacturing firms (as noted in Box 1, these are firms with employees). This represents a decrease of 6% compared to the level in 2003 (Table 1). This decline may be contrasted with the change in the total number of firms in all sectors (i.e. manufacturing and

non-manufacturing sectors) which increased by 4% during the same period.

Within RST areas, the number of manufacturing firms declined by 7% from 2003 to 2007 – reaching a level of 12 thousand manufacturing firms in 2007. Over this period, the number of firms in all sectors located in RST areas declined by 1%, to a level of 233 thousand firms.

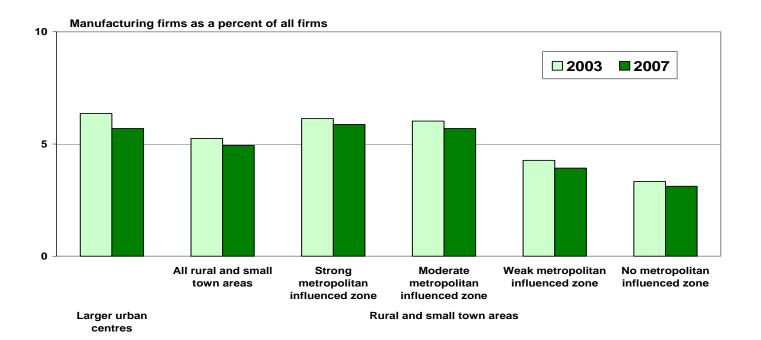
		Rural and small town areas							
	Larger urban centres	All rural and small town areas	Strong metro- politan influenced zone	Moderate metro- politan influenced zone	Weak metro- politan influenced zone	No metro- politan influenced zone			
			nı	ımber of firn	ns				
All firms									
2003 2007	806,710 849,122	236,318 233,455	50,152 50,099	84,949 83,381	88,810 88,293		1,043,028 1,082,577		
Manufacturing fire									
2003 2007	51,303 48,321	12,398 11,519	3,075 2,942	5,116 4,746	3,794 3,467	413 364	,		
	percent distribution of firms across types of geographic areas (row percent)								
All firms									
2003	77	23	5	8	9	1	100		
2007	78	22	5	8	8	1	100		
Manufacturing fire		40	_	0	0	4	400		
2003 2007	81 81	19 19	5 5	8 8	6 6	1	100 100		
2007	01	19	3	0	O	ı	100		
	manufacturing firms as a percent of all firms in each geographic region (column percent)								
Manufacturing fire	ms								
2003	6	5	6	6	4	3			
2007	6	5	6	6	4	3	6		
		percen	t change in	number of f	irms, 2003 t	o 2007			
All firms									
Manufacturing fire	5 ms	-1	0	-2	-1	-6	4		
manarata mg m	-6	-7	-4	-7	-9	-12	-6		

Source: Statistics Canada, Business Register, 2003 and 2007.

Within RST areas, manufacturing firms represent 5% of all firms<sup>2</sup>. There is a slight gradient across the MIZ in terms of the number of manufacturing firms as a percent of all firms. Within Strong MIZ and Moderate MIZ, 6% of all firms are manufacturing firms whereas the shares are lower in Weak MIZ

(4%) and No MIZ (3%) (Figure 1 and Table 1). Rothwell (2010, Table 3) shows that a relatively higher share of firms in Weak MIZ is distributive services firms (i.e. largely retail stores) and in both Weak MIZ and No MIZ, a higher share of firms is social and personal service firms.

Figure 1 In Strong MIZ and Moderate MIZ, 6% of all firms are manufacturing firms, Canada

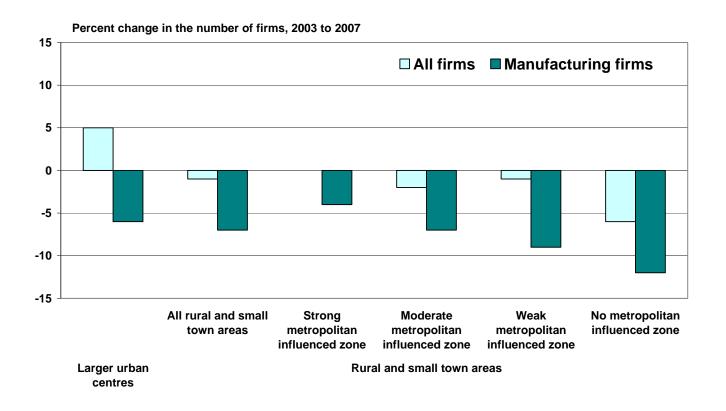


Source: Statistics Canada, Business Register, 2003 and 2007.

As already noted, between 2003 and 2007, the number of firms in all sectors increased for Canada as a whole. The total number of firms increased by 5% in LUC but declined by 1% in RST areas (Figure 2 and Table 1).

<sup>2.</sup> As noted by Rothwell (2010, Table 3), the distribution of RST firms across the various sectors was social and personal service firms (27%), distributive services firms (23%), primary sector firms (18%), producer service firms (15%), construction firms (12%) and manufacturing firms (5%).

Figure 2 Within rural and small town areas, the decline in manufacturing firms was larger in Weak and No MIZ, Canada, 2003 to 2007



Source: Statistics Canada, Business Register, 2003 and 2007.

This was not the pattern for firms in the manufacturing sector. Among manufacturing firms between 2003 and 2007, there was a decline in each type of geographic area. The decline was more pronounced in rural and

small town areas (a decline of 7%). There appears to be a gradient as we move from RST areas with a strong linkage to LUCs (a decline of 4% in Strong MIZ) to more remote areas (a decline of 12% in No MIZ).

In addition to this, there was a decline in the number of manufacturing firms, in each size class within each type of geographic area (Table 2). Generally, in LUC and overall in RST areas, the decline in the number of manufacturing firms with 1 to 4 employees was generally smaller, with Moderate MIZ and No MIZ areas being exceptions.

This pattern of decline in manufacturing firms is in the context of an overall increase in the total number of firms in each size class (except the group with 5 to 9 employees) at the Canada level (Appendix A). Within RST areas, the total number of firms (in all sectors) declined from 2003 to 2007 in each size class, except the group with 1 to 4 employees.

Table 2 Change in the number of manufacturing firms within each size class, Canada, 2003 to 2007

	Size of firm	classified	by number o	of employee fu	ıll-time equiv	valents
	1 to 4	5 to 9	10 to 49	50 to 199	200 or more	All firms
		number	of manufac	turing firms, 2	2003	
All areas	27,118	9,761	17,172	7,601	2,049	63,701
Larger urban centres	20,923	7,944	14,440	6,348	1,648	51,303
All rural and small town areas	6,195	1,817	2,732	1,253	401	12,398
Strong metropolitan influenced zone	1,604	456	702	251	62	3,075
Moderate metropolitan influenced zone	2,486	724	1,145	601	160	5,116
Weak metropolitan influenced zone	1,882	582	801	368	161	3,794
No metropolitan influenced zone	223	55	84	33	18	413
		number	of manufac	turing firms, 2	2007	
All areas	26,030	8,939	16,008	6,969	1,894	59,840
Larger urban centres	20,173	7,254	13,476	5,888	1,530	48,321
All rural and small town areas	5,857	1,685	2,532	1,081	364	11,519
Strong metropolitan influenced zone	1,577	435	635	236	59	2,942
Moderate metropolitan influenced zone	2,318	700	1,096	481	151	4,746
Weak metropolitan influenced zone	1,771	496	725	337	138	3,467
No metropolitan influenced zone	191	54	76	27	16	364
		perc	ent change	, 2003 to 2007	7	
All areas	-4	-8	-7	-8	-8	-6
Larger urban centres	-4	-9	-7	-7	-7	-6
All rural and small town areas	-5	-7	-7	-14	-9	-7
Strong metropolitan influenced zone	-2	-5	-10	-6	-5	-4
Moderate metropolitan influenced zone	-7	-3	-4	-20	-6	-7
Weak metropolitan influenced zone	-6	-15	-9	-8	-14	-9
No metropolitan influenced zone	-14	-2	-10	-18	-11	-12

Source: Statistics Canada. Business Register, 2003 and 2007.

# Manufacturing firms in the value chain of the resource sectors

One objective of our study is to document the number and the change in the number of manufacturing firms in the value chain of a resource sector.

A "value chain" can be defined as "the full range of activities which are required to bring a product or service from conception, through the intermediary phases of production, delivery to final consumers, and final disposal after use" (Kaplinsky,1999, p. 21). These activities can include input and services to the primary producer, primary production, processing, handling, transportation, storage and retail, and

services activities related to processing and marketing, including financial, insurance, etc. (Porter, 1985).

Over the last decades, the economy of rural regions has become increasingly diversified and service-oriented. This transformation is largely associated with major changes in the value chains of traditionally rural and remote resource sectors (agriculture, forestry, fishing, mining, and energy). There are two salient features of these changes which are relevant for rural development initiatives. First, there has been a continuous shift of employment from primary production to processing and to service activities; for instance, from farming to services to farmers and to processing of agricultural products. Second, there has been a spatial reorganization of some of the activities in the value chains, between and within rural and urban areas; for example, some of the services to farmers that were located in small villages have been relocated into larger towns or cities (See, for example, Desmets and Fafchamps [2005]).

Both processes of change are ongoing. New technologies keep reducing the amount of labour per unit of output in primary production—and increasingly also in the service sector. Similarly, the process of spatial reorganization has gone through rapid development at the national and global level. Notably, after decades concentration of processing activities in core urban areas, many countries are now experiencing a reverse core-periphery pattern in which manufacturing activities relocate into rural regions (See, for examples, Baldwin et al. [2001] and Chatterjee and Carlino [2001]).

The analysis of a value chain, from a regional perspective, requires mapping and understanding of the ways in which specific economic activities of a region are linked to the rest of the national and global economy. The nature of these linkages can determine, to a large extent, the distributional outcomes

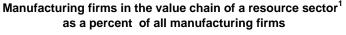
along the chain and the capacity of a region to upgrade and sustain its economic base (Kaplinsky and Morris, 2001). Part of the success of a region in adding value to their primary production lies in the ability of such a region to access and to reap the benefit of specific value chains (UNCTAD, 2000). Being cut off from a specific value chain may have severe consequences for a region. Therefore, an analysis of the structure and nature of the rural component of value chains can help us to understand the nature of widening or narrowing regional inequalities (Kaplinsky and Morris, 2001).

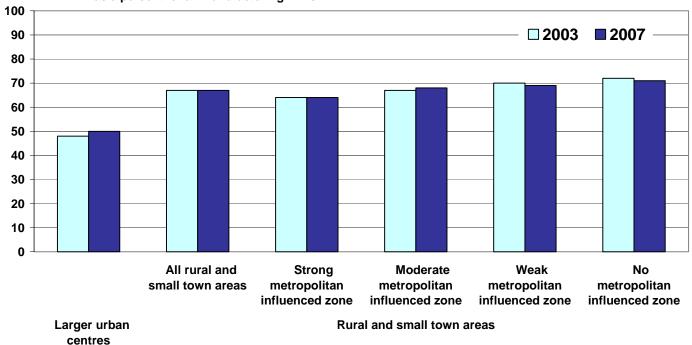
Manufacturing firms in the value chain of a resource sector process the products from a primary resource sector (agriculture, forestry, fishing, mining and oil and gas). The delineation of manufacturing firms to the value chain of each resource sector is specified in Appendix B.

Within RST areas, two-thirds (67%) of all manufacturing firms are classified as part of the value chain of a resource sector (Figure 3 and Table 3). This mirrors the findings of Beshiri (2010) where 68% of the RST manufacturing workforce is employed in manufacturing in the value chain of a resource sector.

The share of manufacturing firms that is in the value chain of a resource sector is somewhat higher in Weak MIZ and No MIZ.

Figure 3 In rural and small town areas, about 2/3 of the manufacturing firms are part of a resource sector value chain, Canada



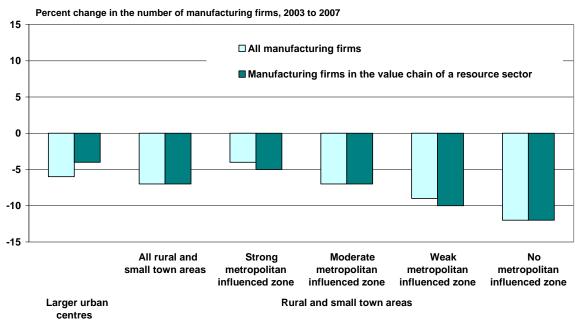


<sup>1.</sup> Manufacturing firms in the value chain of a resource sector process the products from a primary resource sector, as defined in Appendix B. Source: Statistics Canada, Business Register, 2003 and 2007.

Within each type of geographic area over the 2003 to 2007 period, there was a decline in the number of manufacturing firms in the value chain of a resource sector (Figure 4). The rate of decline was somewhat larger in Weak MIZ and No MIZ. Within each type of geographic area, the rate of decline was essentially the same for all manufacturing firms and for

manufacturing firms in the value chain of a resource sector.

Figure 4 From 2003 to 2007, manufacturing firms in the value chain of a resource sector<sup>1</sup> decreased at the same pace as for all manufacturing firms, Canada



<sup>1.</sup> Manufacturing firms in the value chain of a resource sector process the products from a primary resource sector, as defined in Appendix B.

Source: Statistics Canada, Business Register, 2003 and 2007.

Table 3 Number of manufacturing firms by geographic area, Canada, 2003 and 2007

T	T	-		<u></u>				
		Rural and small town areas						
		Larger urban centres	All rural and small town areas	Strong metropolitan influenced zone	Moderate metropolitan influenced zone	Weak metropolitan influenced zone	No metropolitan influenced zone	All areas
	_			num	nber of firms in a	ll sectors		
	2003	806,710	236,318	50,152	84,949	88,810	12,407	1,043,028
All firms	2007	849,122	233,455	50,099	83,381	88,293	11,682	1,082,577
, <del>.</del>	_			perc	ent change, 200	3 to 2007		
	2003 to 2007	5	-1	0	-2	-1	-6	4
	-	54.000	40.000		ber of manufactu	_	440	00.704
	2003	51,303	12,398	3,075	5,116	3,794	413	63,701
	2007	48,321	11,519	2,942	4,746	3,467	364	59,840
All manufacturing				perc	ent change, 200	3 to 2007		
firms	2003 to 2007	-6	-7	-4	-7	-9	-12	-6
	manufacturing firms as a percent of all firms							
	2003	6	5	6	6	4	3	6
	2007	6	5	6	6	4	3	6
			number	of manufacturing	g firms in the valu	ue chain of a res	ource sector <sup>1</sup>	
	2003	25,047	8,358	1,980	3,442	2,639	297	33,405
	2007	23,948	7,739	1,875	3,218	2,386	260	31,687
	-	percent change, 2003 to 2007						
	2003 to 2007	-4	-7	-5	-7	-10	-12	-5
Manufacturing firms	-					1		
in the value chain of a resource sector <sup>1</sup>	-	manufacturing firms in the value chain of a resource sector <sup>1</sup> as a percent of all firm						
	2003	3	4	4	4	3	2	3
						2	2	3
	2007	3	3	4	4	3	2	Ü
	2007 -						nt of all manufact	
	2007 - 2003							

<sup>1.</sup> Manufacturing firms in the value chain of a resource sector are defined in Appendix B.

Source: Statistics Canada, Business Register, 2003 and 2007.

#### Firms in resource-reliant communities

Another objective of our analysis is to investigate the situation in communities that are "reliant" or "dependent" on a primary resource sector and/or the value chain associated with a resource sector. The methodology for delineating a community<sup>3</sup> as "reliant" on a resource sector value chain is outlined in Appendix C.

If we select all communities with more than 30% of the economic base being contributed by a resource sector value chain, we find that these communities represent 37% of all the communities in RST areas (Appendix C, Figure C.1). Among Weak MIZ communities, 60% are reliant on a resource sector value chain.

Compared to the 37% of RST communities being "resource-reliant", we observe that 53% of the population of RST areas is living in a community that is reliant on a resource sector value chain (Appendix C, Figure C.2). This proportion varies across the geographic groups, from a high of 60% in Weak MIZ to a low of 44% in No MIZ and 25% in the RST Territories.

Among all firms in RST areas, one-half of them are located in a community that is reliant on a resource sector value chain (Appendix C, Figure C.3).

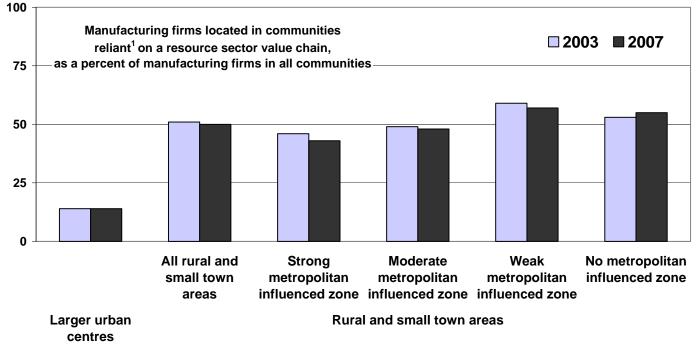
In terms of the change in the number of firms (in all sectors), RST resource-reliant communities showed a larger decrease in the number of firms, compared to the change in the number of firms in all RST communities (Appendix C, Figure C.4). Note that the number of firms in LUC resource-reliant communities increased more than the number of firms in all LUC communities<sup>4</sup>.

Similar to the finding that one-half of all RST firms in all sectors are located in a resource-reliant RST community, we see that one-half of RST manufacturing firms are located in a resource-reliant community (Figure 5).

<sup>3.</sup> In this study, a "community" is represented by a census subdivision. A census subdivision is an incorporated town or municipality. For details, see Statistics Canada (2002).

<sup>4.</sup> In 2001, there were 140 census metropolitan areas (CMAs) and census agglomerations (CAs) in Canada. These are "functional labour market areas" as any neighbouring census subdivision (i.e. incorporated town or municipality) with more than 50% of their workforce commuting to the CMA/CA urban core is included in the given CMA or CA. In 2001, there were 995 census subdivisions included in a CMA or CA in Canada. Census subdivisions are referred to as "communities" in this bulletin.

Figure 5 Among the manufacturing firms in rural and small town areas, 50% are located in communities reliant<sup>1</sup> on a resource sector, Canada

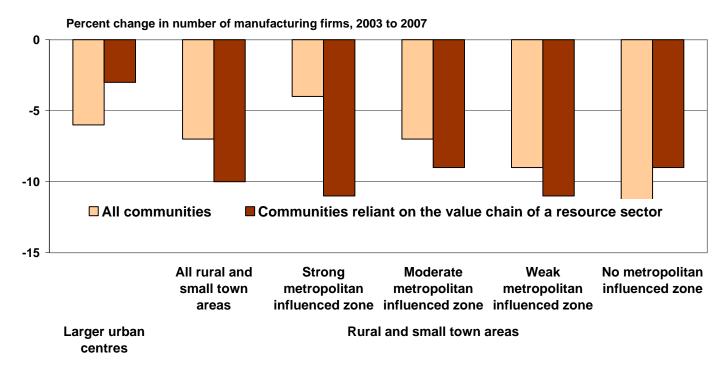


1. Communities with more than 30% of their "economic base" reliant on the value chain of a resource sector (as described in Appendix C). Source: Statistics Canada, Business Register, 2003 and 2007; and Statistics Canada, Census of Population, 2001.

Within RST areas, the rate of decline of manufacturing firms was larger in resource-reliant communities than the decline in manufacturing firms in all RST communities (Figure 6). Thus, the loss of manufacturing

firms in non-resource-reliant communities was somewhat slower.

Figure 6 There was a 10% decline from 2003 to 2007 in the number of manufacturing firms in rural and small town communities that were reliant on a resource sector



<sup>1.</sup> Communities with more than 30% of their "economic base" reliant on the value chain of a resource sector. Source: Statistics Canada, Business Register, 2003 and 2007; and Statistics Canada, Census of Population, 2001.

## Summary

Within rural and small town areas, 5% of the business enterprises are manufacturing firms, slightly lower than the 6% share of business enterprises that are manufacturing firms in larger urban centres.

In rural and small town areas close to larger urban centres, the share of all firms that are manufacturing firms matches the share in larger urban centres (6%).

Between 2003 and 2007, the number of manufacturing firms in Canada declined by 6%. The decline in rural and small town areas (-7%) was slightly more than the decline in larger urban centres (-6%).

The further the community was far from a larger urban centre, the larger was the rate of decline of the number of manufacturing firms.

In rural and small town areas, two-thirds of the manufacturing firms are part of the value chain of a primary resource sector. These firms are processing the products of the primary sector. This may be compared to larger urban centres where one-half of the manufacturing firms are part of the value chain of a primary resource sector.

In each geographical group, the rate of decline of manufacturing firms in the value chain of a resource sector was the same as the rate of decline for all manufacturing firms. Within rural and small town areas in 2001, 37% of the communities (representing 53% of the population) were resource-reliant communities. As defined by Natural Resources Canada, a resource-reliant community has more than 30% of the economic base contributed by the value chain of a primary sector (agriculture, fishing, forestry, mining or energy).

In rural and small town areas, the number of manufacturing firms declined more rapidly in resource-reliant communities than in nonresource-reliant communities.

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#### Appendix A Change in number of firms by size of firm, Canada, 2003 to 2007

For Canada as a whole, the total number of firms increased in each size class – except for a 3% decline in the number of firms with 5 to 9 employees (Table A.1). The number of firms with 200 or more employees increased 1.6 thousand in larger urban centres (LUC) – which was an increase of 19% over this period.

The number of firms with 1 to 4 employees increased in all geographic areas, except No MIZ. Strong MIZ and Weak MIZ showed an increase in firms with 200 or more employees over this period. The number of firms within RST in the other size classes declined from 2003 to 2007.

Table A.1 Change in number of firms within each size class, Canada, 2003 to 2007

	Size o	f firm classifie	d by number of	of employee fu	ull-time equiv	alents
	1 to 4	5 to 9	10 to 49	50 to 99	200 or more	All firms
		numl	ber of firms in	all sectors, 20	003	
All areas	594,232	182,048	211,685	45,485	9,578	1,043,028
Larger urban centres	439,213	144,133	175,473	39,407	8,484	806,710
All rural and small town areas	155,019	37,915	36,212	6,078	1,094	236,318
Strong metropolitan influenced zone	33,656	7,799	7,370	1,168	159	50,152
Moderate metropolitan influenced zone	57,169	13,165	12,125	2,122	368	84,949
Weak metropolitan influenced zone	55,437	15,053	15,227	2,569	524	88,810
No metropolitan influenced zone	8,757	1,898	1,490	219	43	12,407
		numl	ber of firms in	all sectors, 20	007	
All areas	633,258	177,248	213,543	47,392	11,136	1,082,577
Larger urban centres	476,650	142,406	178,444	41,555	10,067	849,122
All rural and small town areas	156,608	34,842	35,099	5,837	1,069	233,455
Strong metropolitan influenced zone	34,713	6,994	7,109	1,114	169	50,099
Moderate metropolitan influenced zone	57,717	11,941	11,443	1,946	334	83,381
Weak metropolitan influenced zone	55,875	14,239	15,075	2,576	528	88,293
No metropolitan influenced zone	8,303	1,668	1,472	201	38	11,682
		ре	rcent change	, 2003 to 2007	7	
All areas	7	-3	1	4	16	4
Larger urban centres	9	-1	2	5	19	5
All rural and small town areas	1	-8	-3	-4	-2	-1
Strong metropolitan influenced zone	3	-10	-4	-5	6	0
Moderate metropolitan influenced zone	1	-9	-6	-8	-9	-2
Weak metropolitan influenced zone	1	-5	-1	0	1	-1
No metropolitan influenced zone	-5	-12	-1	-8	-12	-6

Source: Statistics Canada, Business Register, 2003 and 2007.

#### Appendix B Manufacturing firms in the value chain of a resource sector

One objective of our study is to document the number and change in manufacturing firms that are in the value chain of a resource sector. The resource sectors include the sectors of agriculture, forestry, fishing, mining and oil and gas. Firms that process the products of a primary resource sector have been assigned as part of the value chain of a resource sector. For the purpose of this study and to be consistent with the analysis manufacturing of by employment Beshiri (2010),manufacturing firms assigned to the value chain of a resource sector are specified in Table B.1.

With this delineation, 52% of all manufacturing firms in Canada are part of the value chain of a resource sector. Within the group of manufacturing firms in the value chain of a resource sector, about one-quarter are associated with the agriculture sector, about one-third are associated with the forestry sector and another approximate one-third are associated with the mining sector.

Among manufacturing firms in the value chain of a resource sector, one sub-sector, beverage and tobacco product manufacturing, recorded an increase in the number of firms (up 11%) between 2003 and 2007. All other sub-sectors in the value chain of a resource sector recorded declines with the largest decline (-27%) being in the number of firms in the leather and allied product manufacturing sector.

Overall, the number of manufacturing firms in the value chain of a resource sector declined by 5% from 2003 to 2007, compared to a decline of 7% in the number of firms in all other manufacturing sub-sectors.

Table B.1 Manufacturing firms in the value chain of a resource sector, Canada, 2003 and 2007

	Firms with employees							
	2003	2007	2003	2007	2003	2007		
Manufacturing sub-sector		number manufa within the		ent of ng firms le chain of sector	as percent of all manufacturing firms		percent change, 2003 to 2007	
Manufacturing sub-sectors assigned to the value chain of a resource sector								
Food manufacturing (NAICS 311)	6,970	6,316	21	20	11	11	-9	
Beverage and tobacco product manufacturing (NAICS 312)	686	761	2	2	1	1	11	
Leather and allied product manufacturing (NAICS 316)	444	326	1	1	1	1	-27	
Agriculture and fishing sectors value chain (subtotal)	8,100	7,403	24	23	13	12	-9	
Wood product manufacturing (NAICS 321)	4,611	4,264	14	13	7	7	-8	
Paper manufacturing (NAICS 322)	988	879	3	3	2	1	-11	
Furniture and related product manufacturing (NAICS 337)	4,529	4,501	14	14	7	8	-1	
Forestry sector value chain (subtotal)	10,128	9,644	30	30	16	16	-5	
Petroleum and coal products manufacturing (NAICS 324)	337	364	1	1	1	1	8	
Plastics and rubber products manufacturing (NAICS 326)	2,628	2,463	8	8	4	4	-6	
Oil and gas sector value chain (subtotal)	2,965	2,827	9	9	5	5	2	
Non-metallic mineral product manufacturing (NAICS 327)	2,591	2,502	8	8	4	4	-3	
Primary metal manufacturing (NAICS 331)	767	749	2	2	1	1	-2	
Fabricated metal product manufacturing (NAICS 332)	8,889	8,589	27	27	14	14	-3	
Mining sector value chain (subtotal)	12,247	11,840	37	37	19	20	-3	
Manufacturing sub-sectors in the value chain of a resource sector (subtotal)	33,440	31,714	100	100	52	53	-5	
All other manufacturing subsectors								
Textile mills (NAICS 313)	747	556			1	1	-26	
Textile product mills (NAICS 314)	1,091	962			2	2	-12	
Clothing manufacturing (NAICS 315)	3,311	2,304			5	4	-30	
Printing and related support activities (NAICS 323)	5,272	4,897			8	8	-7	
Chemical manufacturing (NAICS 325)	2,440	2,302			4	4	-6	
Machinery manufacturing (NAICS 333)	5,624	5,523			9	9	-2	
Computer and electronic product manufacturing (NAICS 334)	2,273	2,089			4	3	-8	
Electrical equipment, appliance and component manufacturing (NAICS 335)	1,298	1,262			2	2	-3	
Transportation equipment manufacturing (NAICS 336)	2,637	2,506			4	4	-5	
Miscellaneous manufacturing (NAICS 339)	5,634	5,778	•••	•••	9	10	3	
All other manufacturing subsectors (subtotal)	30,327	28,179			48	47	-7	
All manufacturing firms	63,767	59,893			100	100	-6	

Note: Details on NAICS (North American Industry Classification System) are available in Statistics Canada. (2007) North American Industry Classification System: 2007 (Ottawa: Statistics Canada, Catalogue no. 12-501).

Source: Statistics Canada, Business Register, 2003 and 2007.

## Appendix C Estimating the degree of "reliance" or "dependency" of a community on a primary sector value chain

For this delineation, we have adopted the delineation of "resource-reliance" as portrayed on the National Atlas of Canada (Natural Resources Canada, 2001; White and Watson, 1998).

They allocated the following industrial sectors (using SIC (Standard Industrial Classification) codes) to each of the value chains of a resource sector.

#### The agriculture sector value chain:

- Major Group 01 Agricultural (Farming) Industries;
- Major Group 02 Service Industries Incidental to Agriculture;
- Major Group 10 Food Processing Industries (all groups, except 102 Fish Products Industry);
- Group 471 Grain Elevator Industry;
- Major Group 50 Farm Products Industries, Wholesale (all groups); and
- Group 521 Food Wholesale.

#### The energy sector value chain:

- Major Group 07 Crude Petroleum and Natural Gas Industries;
- Group 091 Service Industries Incidental to Crude Petroleum and Natural Gas;
- Major Group 36 Refined Petroleum and Coal Products Industries;
- Major Group 46 Pipeline Transport;
- Group 491 Electric Power Systems Industry;
- Group 492 Gas Distribution Systems Industry; and
- Group 51 Petroleum Products Industries, Wholesale.

#### The fishing sector value chain:

- Group 031 Fishing Industries;
- Group 032 Services Incidental to Fishing; and
- Group 102 Fish Products Processing Industry.

#### The forestry sector value chain:

- Major Group 04 Logging Industry;;
- Major Group 05 Forestry Services Industry;
- Major Group 25 Wood Processing Industries; and
- Major Group 27 Paper and Allied Products Industries.

The mining sector value chain:

- Major Group 06 Mining Industry;
- Major Group 08 Quarry and Sand Pit Industries;
- Group 092 Service Industries Incidental to Mining;
- Major Group 29 Primary Metal Industries;
- Group 351 Clay Products Industries;
- Group 358 Lime Industry; and
- Group 561 Metal and Metal Products, Wholesale.

For each of these value chains, the following steps were taken:

- 1) For each community, for each value chain (and for an "all other" group), they tabulated the Census of Population to obtain the employment income reported by workers with their major job in each of these value chains;
- 2) For each community and for each value chain (and for the "all other" group), they calculated the employment income associated with production that was not required for local needs.
  - The estimate of the level of employment income required for each value chain to satisfy local needs was proxied by a province-level calculation, as follows. The provincial gross domestic product (GDP) for each value chain was determined. The net value of exports (i.e. exports minus imports) from the province for this value chain was subtracted from the GDP of the value chain to get an estimate of the GDP in each value chain that met provincial needs. This estimated amount to satisfy provincial needs was than divided by the provincial level GDP to get an estimate of the percent of the provincial level of production that was needed to satisfy provincial needs for the given value chain.
- 3) For each community and for each value chain, this percent was multiplied by the community aggregate employment income to estimate the amount of community employment income that would be needed to meet community needs. All employment income in each value chain in the given community that was above this amount was considered to be a contribution to the "economic base" (or the "export base") of the community.
- 4) For each community, the size of the economic base was calculated including the contribution of the value chain for each resource sector plus the contribution of all other sectors (e.g. health services, educational services, retail trade, etc.)
- 5) The contribution of each resource-sector value chain to the community economic base was calculated.
- 6) The percent contribution of the value chain of each resource sector to the economic base of the community was designated as the estimate of "resource-reliance" or "economic-dependency" of the community on the value chain of the particular resource sector.

In 2001, there were 1,918 census subdivisions (i.e. incorporated towns and municipalities) with 30% or more of their economic base generated by a resource sector value chain (Table C.1).

Table C.1 Number of resource-reliant communities, Canada, 2001

		Rural and small town areas						
	Larger urban centres	All rural and small town areas	Strong metro- politan influenced zone	Moderate metro politan infuenced zone	Weak metro- politan influenced zone	No metro- politan influenced zone	RST Territories	All areas
All communities¹ in Canada Number of communities¹ Population in 2001	995 25,631,557	4,605 5,981,340	566 1,350,098	1,388 2,224,347	1,016 2,049,199	1,538 297,984	97 59,712	5,600 31,612,897
All resource-reliant communities 30%+ resource reliant number of communities <sup>1</sup>	231	1,687	231	656	582	205	13	1,918
as percent of all communities <sup>1</sup>	23	37	41	47	57	13	13	34
population in 1996	3,874,162	3,214,702	634,012	1,144,750	1,281,523	136,871	17,546	7,088,864
population in 2001	4,036,280	3,162,437	656,077	1,129,062	1,232,466	129,664	15,168	7,198,717
1996 to 2001 percent change	4	-2	3	-1	-4	-5	-14	2
2001 population as percent of population of all communities	16	53	49	51	60	44	25	23
Resource-reliant communities with 30%+ relia	ance on the v	alue chain of	a single res	ource group (su	btotal)			
30%+ resource reliant								
number of communities <sup>1</sup>	219	1,617	219	633	554	198	13	1,836
as percent of all communities <sup>1</sup>	22	35	39	46	55	13	13	33
population in 1996	3,816,614	3,030,025	574,744	1,080,033	1,224,995	132,707	17,546	6,846,639
population in 2001	3,980,232	2,975,287	594,127	1,062,419	1,177,616	125,957	15,168	6,955,519
1996 to 2001 percent change	4	-2	3	-2	-4	-5	-14	2
2001 population as percent of population of all communities	16	50	44	48	57	42	25	22
Resource-reliant communities with 30%+ reliance on the value chain of more than one resource group (subtotal)								
30%+ resource reliant						,		
number of communities <sup>1</sup>	12	70	12	23	28	7	0	82
as percent of all communities <sup>1</sup>	1	2	2	2	3	0	0	1
population in 1996	57,548	184,677	59,268	64,717	56,528	4,164	0	242,225
population in 2001	56,048	187,150	61,950	66,643	54,850	3,707	0	243,198
1996 to 2001 percent change	-3	1	5	3	-3	-11		0
2001 population as percent of	0	3	5	3	3	1	0	1
population of all communities  1. In this table, "communities" refers to census s	. de elle de la ce e di	- :						

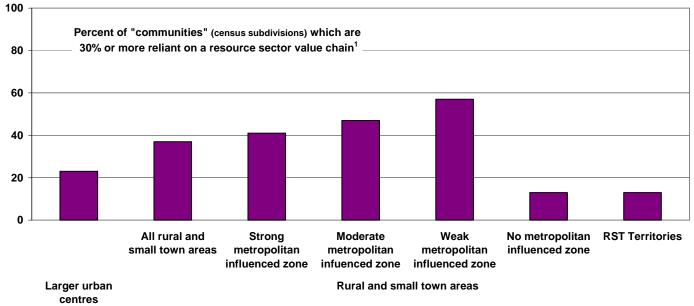
<sup>1.</sup> In this table, "communities" refers to census subdivisions (i.e. incorporated towns and municipalities).

Source: Natural Resources Canada, 2001, Resource-reliant Communities, 2001 (Ottawa: Natural Resources Canada, National Atlas of Canada) http://atlas.nrcan.gc.ca/site/english/maps/economic/rdc2001

If we select all communities with more than 30% of the economic base being contributed by a resource sector value chain, we observe these communities represent 37% of all the

communities in RST areas (Table C.1 and Figure C.1). Nearly 60% of the Weak MIZ communities are reliant on a resource sector value chain.

Figure C.1 In the Weak MIZ, 57% of the communities are "reliant" on a resource sector value chain (contributing 30% or more to the economic base<sup>2</sup> of the community), Canada, 2001



<sup>1.</sup> The resource sectors include agriculture, forestry, fishing, mining and oil and gas. Included in their respective value chains are services incidental to primary production, first-stage processing and wholesaling. For details, see Appendix C.

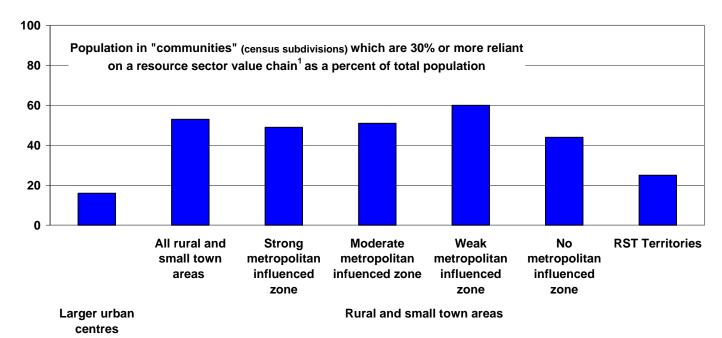
Compared to the 37% of RST communities being "resource-reliant", we find that 53% of the population of RST areas lives in a community that is reliant on a resource sector value chain (Figure C.2). This proportion

varies across the geographic groups, from a high of 60% in Weak MIZ to a low of 44% in No MIZ and 25% in the RST Territories.

<sup>2.</sup> The economic base is the output from all sectors that surpasses community needs and is thus available for export (from the community to another town or to another country). Thus, in these communities, more than 30% of the export activity is contributed by one of the resource sector value chains.

Source: Natural Resources Canada (2001).

Figure C.2 In the Weak MIZ, 60% of the population resides in communities that are "reliant" on a resource sector value chain (contributing 30% or more to the economic base of the community), Canada, 2001



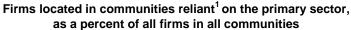
<sup>1.</sup> The resource sectors include agriculture, forestry, fishing, mining and gas and oil. Included in their respective value chains are services incidental to primary production, first-stage processing and wholesaling.

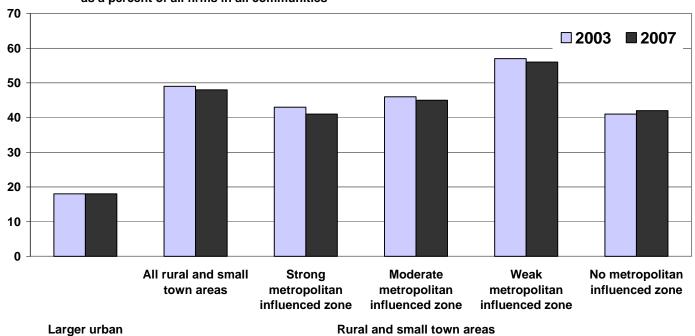
Among all firms (in all sectors) in RST areas, one-half are located in a community that is reliant on a resource sector value chain (Figure C.3).

<sup>2.</sup> The economic base is the output from all sectors that surpasses community needs and is thus available for export (from the community to another town or to another country). Thus, in these communities, more than 30% of the export activity is contributed by one of the resource sector value chains.

Source: Natural Resources Canada, 2001.

Figure C.3 In rural and small town Canada, 50% of the firms are located in communities reliant<sup>1</sup> on the primary sector



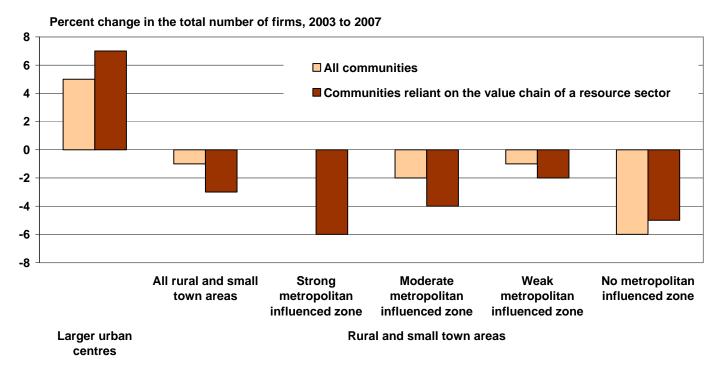


<sup>1.</sup> Communities with more than 30% of their "economic base" reliant on the value-chain of a primary sector (as described in Appendix C). Source: Statistics Canada, Business Register, 2003 and 2007; and Statistics Canada. Census of Population, 2001.

In terms of the change in the number of firms, RST resource-reliant communities reported a larger decrease in the number of firms in all sectors, compared to the change in number of firms in all RST communities (Figure C.4). Note that number of firms in LUC resource-reliant communities increased more than the number of firms in all LUC communities<sup>5</sup>.

<sup>5.</sup> In 2001, there were 140 census metropolitan areas (CMAs) and census agglomerations (CAs) in Canada. These are labour market areas as any neighbouring census subdivision (i.e. incorporated town or municipality) with more than 50% of their workforce commuting to the CMA/CA urban core is included in the given CMA or CA. In 2001, there were 995 census subdivisions included in a CMA or CA in Canada. Census subdivisions are referred to as "communities" in this bulletin.

Figure C.4 There was a 3% decline from 2003 to 2007 in the total number of (manufacturing and non-manufacturing) firms in rural and small town communities that were reliant1 on a resource sector



<sup>1.</sup> Communities with more than 30% of their "economic base" reliant on the value chain of a resource sector. Source: Statistics Canada, Business Register, 2003 and 2007; and Statistics Canada, Census of Population, 2001.

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