Role of Small Businesses in Calgary: 1998 - 2011

Briefing Note

October 2012

Executive Summary

In this study we explore the impact small businesses have on Calgary's economy by looking in depth at the effect various business sizes have on employment and gross domestic product.

Since 1979 the mantra in public policy has been "small business is the engine of the economy". Certainly, by sheer numbers this category is the largest contributor to a local economy. We want to know if there is anything inherent in small business that makes them more economically productive or greater employers than big business. We utilize regression analysis to measure the effects of business sizes on employment and GDP in Calgary thereby generating indirect evidence to show whether small businesses creates most of the new jobs or GDP in Calgary.

Result: On average in Calgary we do not find that people employed in any size of business have any greater economic impact than people employed any other size of business. There are about 170 very large corporations in Calgary compared to about 50,000 small businesses. In total, there are about twice as many people employed in small businesses compared to big businesses and the total economic impact of small businesses in Calgary is about twice that of the very large corporations.

In short, small business is not "the engine of the economy" in Calgary. People are the engine of the Calgary economy.

However, when we look at the details we find that there are some industries in Calgary where small businesses definitely outshine other size businesses.

In terms of both Employment and GDP, small businesses in these industries account for a greater than proportionate share of economic activity in Calgary;
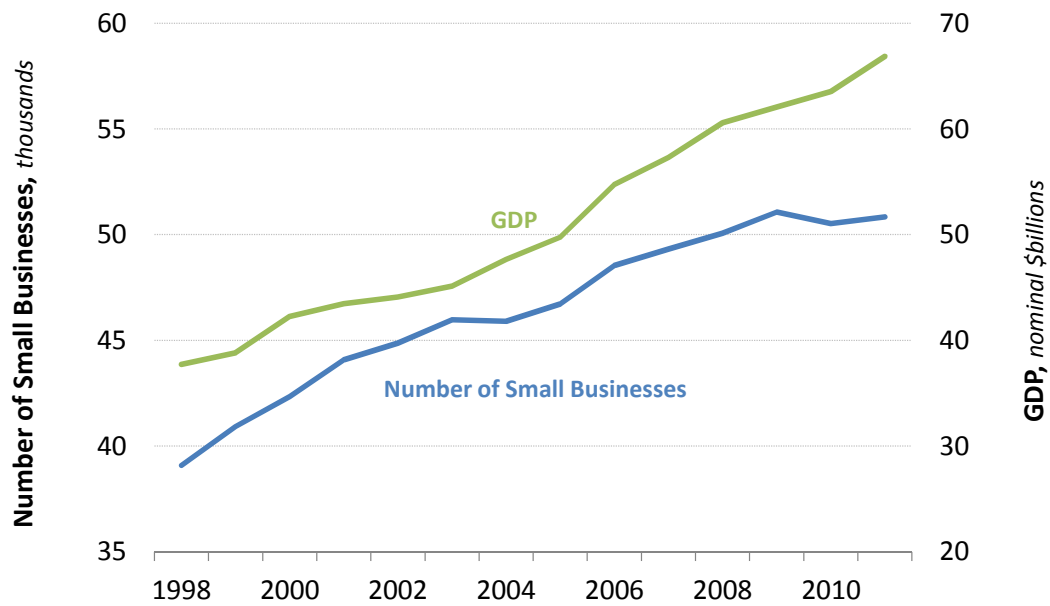
- ▶ Trade
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P.O. Box 2100, Stn. M, #8311, Calgary, AB, Canada T2P 2M5

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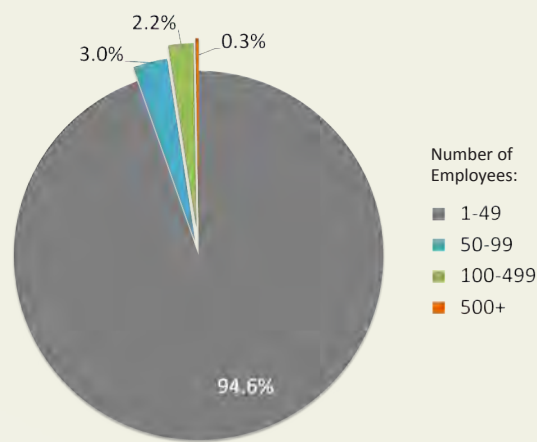**Figure 1.** Number of Small Businesses and GDP 1998-2011

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What is a small business?

Businesses are defined in several different ways; eg: number of employees, assets, capital investments. For this paper, we define the size of the business based on the number of employees. The business size categories have been condensed down to the following categories;

- ► Small Business
  - 1 – 49 Employees
- ► Medium-Sized Business
  - 50 – 99 Employees
- ► Large Business
  - 100 – 499 Employees
- ► Big Business
  - 500+ Employees

Small businesses make up a large percentage of the total number of businesses in Calgary, as they commonly do elsewhere including Canada as a whole (Small Business Branch, 2011). Over 90% of Calgary businesses are small. This has been consistently so for at least the last 14 years. (Business Registry Division, 1998-2011).

Adapted from Statistics Canada, Business Registry Division, Number of Businesses in Calgary Economic Region, Census Division 6, Alberta, by North American Industry Classification and Employee Size, 1998 - 2011, May 2012. This does not constitute an endorsement by Statistics Canada of this product.

1. Introduction

Small businesses are often called the engine of an economy as it is believed that they create many jobs (Birch, 1979). Accordingly, It is common for many levels of government to set public policy in favour of small businesses (Neumark, Wall, & Zhang, 2008). Although it is clear that small businesses play a significant role in the economy, the question is: are small businesses more productive or are there just a lot of them? In this paper we analyze the impact that businesses of various sizes and industries have on employment and gross domestic product in Calgary.

2. Literature Review

We reviewed the economic literature concerning small business impact on the economy, the seminal work being "The Job Generation Process" by David Birch (1979). Birch's original study on the role of small businesses in job creation was vital as there was no significant finding prior to his research about how important small businesses were in the economy. Birch's study stated that small firms with less than 100 employees created most new jobs compared to big businesses. 8 out of 10 new jobs were created by small businesses, according to Birch. Extensive research by others was conducted

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following Birch's work, with some supporting Birch's claim and others not.

Those who agree with Birch's findings confirm the importance of small businesses but vary on the degree of importance and they question the possibility of statistical error in his study. Some studies that disagree with Birch's findings investigate characteristics not discussed by Birch, such as the business age (Schreyer, 2000). According to a report by the Small Business Administration, most small businesses will start out small, remain the same size, and in most cases close a few years after opening (Headd, 2010). Young businesses are highly correlated with small businesses whereas old businesses are highly correlated with large businesses but Birch's study does not explore such characteristics.

Even amongst studies that have similar findings, there are many differences in the research itself. One of the main differences among these studies is the methodology; how are the sizes of businesses categorized? What characteristic of a business is taken into account? Are calculations carried out the same way? Is the study specific to one industry or does it take into account the overall effect regardless of industry?

Another difference is the choice of database used. The methods of collecting data vary depending on the source and therefore technical error may exist, leading to different results and interpretation of the data. Extensive data on businesses may be only available in certain regions and for certain periods of time.

Although it is often said that "small business is the engine of the economy", there appears to be no clear consensus on this in the literature.

3.   Data

3.1   Data Source

The data available for our research covers 1998 to 2011 in the Calgary Economic Region[1]. We use the Number of Businesses in Calgary Economic Region (Census Division 6) Alberta, by North American Industry Classification and Employee Size, 1998-2011 from Statistics Canada, Business Registry Division.

We also use GDP by industry (1998-2011) for Calgary[2], employment by industry for Calgary and other cities in Alberta (Statistics Canada, 1998-2011).

Information regarding business tax systems is from various municipal websites. (City of Red Deer, 2012) (City of Calgary, 2012)

The impact of firm size on firm profitability has been researched by others. As we do not have sufficient data for that analysis it is outside the scope of this paper. Interested readers are referred to (Lafrance, 2012) for further reading.

3.2   Data Modification

Business size in this data set is determined by number of employees. Raw data shows the breakdown of size category from 1-4, 5-9, 10-19, 20-49, 50-99, 100-199, 200-499 and 500+. The number of business sizes is condensed in accordance with Industry Canada definition of business sizes; 1-49 (small), 50-99 (medium), 100-499

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1   The Calgary Economic Region contains the city of Calgary as well as surrounding areas which include Foothills No. 31, High River, Longview, Turner Valley, Black Diamond, Okotoks, Rocky View County, Chestermere, Cochrane, Airdrie, Irricana, Beiseker, Crossfield, Mountain View County, Carstairs, Cremona, Didsbury, Olds, Sundre, Eden Valley 216 and Tsuu T'ina Nation 145.

2   Based on Corporate Economics estimates.

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(large) and 499+ (big business).

In this analysis, we further refine our investigation using 2 digit NAICS codes to search for industry specific impacts of different sizes of businesses.

4.   Methodology

In the literature the number of jobs created, destroyed, and the net changes in employment are used to calculate the role of small business. Data required to measure such factors are unavailable at the municipal level therefore we attempted to derive the data from available information. We tried a couple methods to estimate the number of employees in each category to be able to measure job creation and job destruction. First we attempted to multiply the number of businesses by the midpoint of the category. This proved ineffective as it produced an overestimate of the total number employed.

Another method tried was to assume a normal distribution curve for each business size category and utilize the mean of the distribution to estimate the total number of employees in each business size category. Our investigation revealed the distribution of employment is not normal and likely follows a chi-squared[3] distribution, hence fitting a distribution to employment proved unworkable. Without the average number of employees in each category, detailed analysis of the job creation and job destruction could not be made.

The analysis is limited by not having data on employment creation and destruction at our disposal. We do, however, have the net change in employment, by industry, so we proceed using that information. The lack of more detailed information prevents us from making conclusions about the growth patterns of businesses but

still enables investigation of the importance of small business to the local economy.

Regressions employed in this study use employment and GDP as the dependent variables. The independent variables consist of the following;

- ▶ Dummy Variable: there was a change in data collection methodology in 2007 in the business data

- ▶ Number of businesses with 1-49 employees

- ▶ Number of businesses with 50-100 employees

- ▶ Number of businesses with 100-499 employees

- ▶ Wages are included in the employment equations only

This investigation, like David Burch's, is concerned with comparisons to big business. As such, we drop the variable, 'big business', and permit it to be captured in the constant term. In so doing our results are automatically reported in terms of "compared to big business". Also, we are ensured to avoid a problem with regression analysis known as perfect multicolinearity which would prevent statistical analysis.

We take natural logarithms of our data before estimation. Using natural logarithms converts the regression coefficients to be reported in terms of elasticity. Elasticity shows "If Y changes by 1%, what will be the % change in X?"

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3   Chi-squared distribution is a probability distribution of the sum of the squares of a number of independent random variables.

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Table 1. Number of businesses in each category from 1998 to 2011

Year	1-4	5-9	10-19	20-49	1-49	50-99	100-199	200-499	100-499	500+	Total
1998	22,400	7,436	5,463	3,788	39,087	1,099	484	218	702	88	40,976
1999	24,077	7,599	5,330	3,914	40,920	1,211	521	225	746	82	42,959
2000	24,928	7,769	5,530	4,109	42,336	1,504	718	278	996	121	44,957
2001	26,570	7,681	5,649	4,174	44,074	1,539	732	313	1,045	110	46,768
2002	26,711	7,962	5,860	4,341	44,874	1,623	794	321	1,115	115	47,727
2003	27,603	8,118	6,000	4,255	45,976	1,534	738	325	1,063	116	48,689
2004	27,080	8,278	6,166	4,376	45,900	1,567	786	383	1,169	132	48,768
2005	27,892	8,402	6,007	4,413	46,714	1,615	871	443	1,314	157	49,800
2006	28,841	8,546	6,323	4,826	48,536	1,745	950	504	1,454	183	51,918
2007	31,249	8,767	5,500	3,805	49,321	1,366	738	388	1,126	132	51,945
2008	31,975	8,771	5,636	3,684	50,066	1,390	705	386	1,091	152	52,699
2009	33,086	8,774	5,501	3,702	51,063	1,388	690	385	1,075	153	53,679
2010	32,747	8,664	5,532	3,584	50,527	1,366	659	373	1,032	159	53,084
2011	32,806	8,661	5,647	3,723	50,837	1,408	644	372	1,016	170	53,431

5.   Empirical Results

5.1   Employment

To analyze the impact of business sizes in various industries on employment in Calgary, we employ the following equation:

$$lnEmployment = Constant + \delta(Dummy) + \beta_1 ln(A_i) + \beta_2\, ln(B_i) + \beta_3 ln(C_i) + \beta_4 ln(W_i)$$

Where;

- *Employment*: Total employment in CER
- A_i: Number of businesses with 1-49 employees in industry i
- B_i: Number of businesses with 50-99 employees in industry i
- C_i: Number of businesses with 100-499 employees in industry i
- W_i: Average wage per weekly in industry i

A negative correlation with employment means that a one percent increase in number of businesses (with 1-49 employees for example) will result in a smaller increase in Calgary employment compared to when big business increases by 1%. If the negative coefficient is smaller than -1% (not observed in our work) it would indicate that total employment in Calgary decreases when the number of businesses increases.

Expected Results:

Previous work has shown that small businesses create most of the jobs in national economies (Birch et. al.) therefore we anticipate coefficients for small business to be higher than for medium and large. Previous research by Birch states that 80% of new jobs are created by small businesses. If this holds in our study, the coefficient on

the small business variable in the All Industries equation should be about 2.

Generally, an increase in wages will entice people to work, however a sufficiently high increase in wages entices people to enjoy some leisure time instead. As a result, there is no expectation on labour market reaction to increases in wages. All we can say is if employment rises when wages rise, people don't use their increased income to work fewer hours[4].

Results:

In General:

The All Industries regression shows:

Small business has a coefficient of 0.7130 meaning that a 1% increase in the number of businesses with 1-49 employees will result in a 0.7130% increase in the overall employment more than if the number of big businesses were to increase by 1%.

Medium sized business has a coefficient of -0.2003 which indicates that with a 1% increase in the number of business with 50-99 employees will lead to a 0.2003% decrease in employment relative to big business.

The coefficient of 0.2294 on large businesses implies that a 1% increase in the number of businesses with 100-499 employees would yield a 0.2294% increase in employment compared to big businesses.

Using the elasticity estimates for the All Industries equation in Table 2 we derive the share of new jobs created by business size in Calgary[5]:

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4   The regression analysis for All Industries shows people still work more hours when wages rise, but we note that wages in the Mining, Oil and Gas industries might be so high that people in this industry might be working less when their wages go up.

5   See appendix for methodology.

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Table 2. Coefficients and F-Test for Employment

Industry Code	Industry Name	Indeterminate	1-49	50-99	100-499	Wages	Constant	F-Test	P-Value
ALL	All Industries	-0.0368	**0.7130	*-0.2003	**0.2294	**0.2315	-2.8228	1.1779	0.3094
11	Agriculture	*-0.1239	0.0324	*0.0598	0.0272	**0.4708	3.0076	19.4896	0.0022
21	Mining, Oil and Gas	**-0.2331	*0.1876	**0.6695	0.0056	-0.0686	*2.7187	76.3507	0.0000
22	Utilities	*-0.0656	-0.2247	0.0195	**0.0635	**0.5209	**3.5784	52.5204	0.0001
23	Construction	-0.0473	*0.4823	-0.0815	0.1265	0.1587	1.1108	4.0795	0.0781
31-33	Manufacturing	*-0.0792	-0.0274	0.1440	0.1519	**0.7266	0.3748	8.7061	0.0032
41, 44-45	Trade	-0.0044	*1.6582	-0.1190	*0.1832	*0.4679	*-11.455	0.7591	0.4090
48-49	Transportation and Warehousing	-0.0229	0.4225	0.0910	0.0500	*0.4473	-0.1504	2.5087	0.1519
52-53	Finance, Insurance, Real Estate and Leasing	-0.0950	0.3231	-0.1158	**0.1496	0.3198	1.4168	2.7411	0.1364
54	Professional, Scientific and Technical Services	*-0.1363	0.1817	0.0369	*0.0905	**0.3654	1.7573	16.5948	0.0036
55-56	Business, Building and Other Support Services	-0.0182	0.2409	0.0640	**0.1818	**0.2610	1.4854	23.8352	0.0012
61	Educational Services	**-0.0911	**0.1089	0.0203	**0.1248	0.1116	**2.9135	34.7439	0.0004
62	Health Care and Social Assistance	*-0.0906	-0.5133	0.0713	**0.2520	0.3663	6.9619	8.6331	0.0188
51, 71	Information, Culture and Recreation	*-0.0889	-0.3891	0.0447	**0.3726	0.1992	*6.1147	12.1092	0.0083
72	Accommodation and Food Services	0.0832	0.3132	0.3047	-0.2144	0.5451	0.1382	1.4146	0.2684
81	Other Services	-0.0039	0.2188	0.0374	0.1704	0.2239	2.5441	9.3335	0.0157
91	Public Administration	0.0524	-0.5227	-0.0506	-0.0122	**0.9017	2.3902	16.1892	0.0038

* and ** indicate a 10% and 5% statistical significance

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Business Size	Share of new jobs
Small business	36%
Medium	17%
Large	26%
Big	21%

There are about twice as many people employed in small business in Calgary as in big business. If there is no difference in the job creative capacity of small business compared to big business we would expect small business to take a slightly larger share at around 40%. We found there is no statistically significant difference between the expected 40% and the observed 36% and therefore conclude that in Calgary, on average, business size is not a determinant of employment generation.

Small business is not the engine of employment growth in Calgary. People, employed in every different size of business, are the engines of employment growth in Calgary.

By Industry:

When we look at individual industries we find that some different size operations have different impacts on employment in Calgary.

Looking at our detailed analysis we observe that there are industries where the greatest contributors to employment are larger businesses. They are:

- ▶ Agriculture (50-99 employees)
- ▶ Mining Oil and Gas (50-99 employees)
- ▶ Utilities (100-499 employees)
- ▶ Manufacturing (100-499 employees)
- ▶ Educational Services (100-499 employees)
- ▶ Health Care and Social Assistance** (100-499 employees)

- ▶ Information Culture and Recreation (100-499 employees)
- ▶ Public Administration **(100-499 employees)

It seems that in these industries a larger operation size is required to take advantage of economies of scale and provide the most efficient services. **Please note that starred industries are operated by government agencies and are generally providing service through what could be called big business.

Industries where small business (1-49 employees) had the greatest positive impact on employment were; construction, trade, transportation and warehousing, FIRE (finance, insurance, real estate and leasing), and PSTS (professional, scientific and technical services).

The highest positive coefficient value across all equations was in the small businesses category in the trade industry. Trade includes both wholesale and retail trade. Wholesale trade consists of wholesale distributors of products such as petroleum, food, beverage and tobacco, motor vehicle and parts, building material and supplies. Retail trade consists of stores such as motor vehicle and parts dealers, electronics and appliance stores, building material and garden equipment and supplies dealers and gasoline stations. Among all business in Calgary, small businesses in the trade industry appear to be the most prolific employment generators.

5.2   GDP

Gross domestic product is a measure of all activity in an economy. Conventionally GDP is denoted as consumption + investment + government spending + net exports. Succinctly, it is the measure of all business activity within a region.

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To analyze the impact of business size on the DGP produced in Calgary we employ the following equation:

$$lnGDP = Constant + \delta(Dummy) + \beta_1 ln(A_i) + \beta_2 ln(B_i) + \beta_3 ln(C_i)$$

- ▶ *GDP*: Total GDP in CER
- ▶ A_i: Number of businesses with 1-49 employees in industry i
- ▶ B_i: Number of businesses with 50-99 employees in industry i
- ▶ C_i: Number of businesses with 100-499 employees in industry i

Expected Results:

Previous studies found a wide range of impacts on GDP by small business. The most notable study (Kobe, 2007) stated that the role of small business was significant in the economy and more so than medium or big business. Kobe found small business to be responsible for 54% of business GDP.

Results:

In General:

The All Industries regression shows:

In general across Calgary, small businesses have the greatest positive impact on local GDP. A 1% increase in the number of businesses with 1-49 employees leads to a 1.829% increase in local GDP more than if big business were to grow by 1%.

A 1% increase in the number of business with 50-99 employees result in 0.1893 % less increase in GDP, compared to what would happen if big businesses grew by 1%.

Finally, we find a 1% increase in the number of business with 100-499 employees is expected to result in a 0.0647% increase in the GDP, compared to big businesses.

Using the elasticity estimates for the All Industries equation in Table 3 we derive the share of GDP by business size in Calgary:

Business Size	Share of GDP
Small business	38%
Medium	21%
Large	21%
Big	21%

If there is no difference in the productive capacity of Calgary employees employed in small businesses we would anticipate that small business would be responsible for 40% of the GDP created in Calgary. Our analysis shows there is no statistically significant difference between the expected 40% and the observed 38%. We conclude that Calgary employees are productive irrespective of what size of business they work for.

We confirm previous work showing that small business produces the largest share of business GDP compared to other size firms, but our estimate is not quite as high as Kobe`S. As our estimate of GDP created by different business sizes mirrors the employment shares among different size businesses in Calgary we conclude that small business is not the engine of the Calgary economy. People, employed in every size of business, are the engines of the Calgary economy.

By Industry:

Looking into more detail we find that in some industries different size businesses do have a greater impact on local GDP than others. Industries where larger size businesses make the greater contributor to GDP are:

Table 3. Coefficients and F-Test for GDP

Industry Code	Industry Name	Indeterminate	1-49	50-99	100-499	Constant	F-Test	P-Value
ALL	All Industries	-0.0758	**1.829	-0.1893	0.0647	5.9657	1.7726	0.2158
11	Agriculture	**-0.3449	0.2795	**0.1779	0.0583	**22.6430	3.6298	0.0891
21	Mining, Oil and Gas	**-0.3228	-0.0536	**0.9367	-0.0182	**21.0890	88.4320	0.0000
22	Utilities	**-0.2254	0.2147	0.0535	0.0166	**23.7420	3.1880	0.1078
23	Construction	**-0.1302	**1.0061	*0.3604	-0.1382	**14.8800	0.0004	0.9833
31-33	Manufacturing	**-0.1925	**-0.9224	-0.2723	**0.3681	**31.2680	38.5020	0.0002
41, 44-45	Trade	-0.0683	**4.0711	0.0626	-0.2090	-10.4750	8.1227	0.0191
48-49	Transportation and Warehousing	-0.0459	**1.6068	*0.2831	*-0.2051	**12.5110	12.9105	0.0058
52-53	Finance, Insurance, Real Estate and Leasing	**-0.3269	**1.0219	0.0982	0.0772	**15.674	0.0026	0.9607
54	Professional, Scientific and Technical Services	-0.1635	**1.0372	-0.1822	0.0752	**15.712	0.0085	0.9286
55-56	Business, Building and Other Support Services	**-0.1549	0.3308	0.0993	**0.3253	**20.132	2.4275	0.1537
61	Educational Services	**-0.1922	**0.5243	0.0437	**0.1898	**20.918	6.6033	0.0302
62	Health Care and Social Assistance	**-0.1285	**0.8314	-0.1623	**0.3781	**17.152	0.2915	0.6023
51, 71	Information, Culture and Recreation	**-0.2006	-0.9843	0.1312	**0.6307	**28.445	9.7093	0.0124
72	Accommodation and Food Services	*-0.1731	**1.7462	0.0847	-0.0673	**10.928	4.3627	0.0663
81	Other Services	-0.2022	0.1909	0.0738	**0.31486	**21.859	2.5542	0.1445
91	Public Administration	**-0.1621	0.6141	-0.1090	*0.44184	**21.47	0.4706	0.1510

* and ** indicate a 10% and 5% statistical significance

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Table 4. Growth Rate by Size and by Industry

Growth Rate by Size

Industry Code	Industry Name	1-4	5-9	10-19	20-49	1-49	50-99	100-199	200-499	100-499	500+
11	Agriculture, Forestry, Fishing and Hunting	-1.80%	1.00%	-1.70%	3.36%	-1.52%	25.09%	4.74%	0.00%	-2.95%	0.00%
21	Mining, Quarrying, and Oil and Gas Extraction	0.10%	-1.21%	-0.75%	-0.87%	-0.45%	2.50%	1.73%	3.19%	2.03%	4.67%
22	Utilities	5.09%	2.53%	6.24%	18.04%	5.19%	28.62%	25.96%	24.40%	40.03%	14.74%
23	Construction	4.44%	1.61%	0.97%	-0.71%	3.03%	4.41%	9.04%	9.46%	8.78%	23.91%
31-33	Manufacturing	-2.45%	-1.03%	-0.42%	-2.00%	-1.82%	-2.12%	1.67%	1.48%	1.34%	7.97%
41	Wholesale Trade	-0.48%	1.34%	-0.96%	0.43%	-0.13%	3.74%	10.82%	5.62%	7.75%	0.00%
44-45	Retail Trade	0.67%	3.89%	2.29%	2.23%	1.89%	7.26%	3.00%	1.57%	2.26%	0.00%
48-49	Transportation and Warehousing	3.46%	1.57%	1.61%	-0.36%	2.61%	1.51%	0.66%	6.61%	2.48%	1.35%
51	Information and Cultural Industries	2.10%	0.71%	1.15%	0.29%	1.10%	3.90%	5.27%	6.10%	4.86%	10.42%
52	Finance and Insurance	2.77%	0.24%	-0.86%	0.13%	1.37%	3.03%	6.12%	10.06%	6.52%	15.19%
53	Real Estate and Rental and Leasing	2.90%	-0.38%	-0.09%	-0.07%	1.60%	1.41%	11.48%	40.95%	12.87%	28.97%
54	Professional, Scientific and Technical Services	4.14%	-0.89%	-1.13%	-1.35%	2.78%	2.32%	3.97%	3.28%	3.54%	24.40%
55	Management of Companies and Enterprises	-0.07%	-2.91%	-1.79%	0.29%	-0.89%	-0.42%	6.00%	18.53%	8.40%	32.38%
56	Administrative and Support, Waste Management and Remediation Services	3.72%	3.22%	3.51%	2.42%	3.38%	4.07%	6.43%	8.05%	5.42%	8.20%
61	Educational Services	3.71%	1.91%	4.88%	3.19%	3.20%	10.96%	7.21%	13.97%	6.36%	4.80%
62	Health Care and Social Assistance	3.19%	0.59%	0.55%	1.66%	2.00%	5.03%	4.34%	12.59%	6.71%	5.30%
71	Arts, Entertainment and Recreation	-0.39%	3.24%	-1.27%	4.33%	0.13%	0.16%	4.84%	8.46%	5.41%	11.67%
72	Accommodation and Food Services	0.82%	3.98%	1.94%	1.22%	1.68%	3.35%	-2.01%	2.84%	-1.13%	5.13%
81	Other Services (except Public Administration)	8.75%	3.07%	1.27%	1.92%	5.98%	10.51%	5.60%	6.31%	4.12%	0.00%
91	Public Administration	2.27%	1.22%	3.57%	2.65%	1.41%	-1.46%	5.44%	4.84%	4.01%	-0.44%

Adapted from Statistics Canada, Business Registry Division, Number of Businesses in Calgary Economic Region, Census Division 6, Alberta, by North American Industry Classification and Employee Size, 1998 - 2011, May 2012. This does not constitute an endorsement by Statistics Canada of this product.

Average growth rate by size and industry from 1998 to 2011. 0% growth rate indicates insignificant growth annually which results in a average null growth rate.

Briefing Note

- Mining Oil and Gas (50-99 employees)
- Manufacturing (100-499 employees)
- Information, Culture and Recreation (100-499 employees)
- Other Services (100-499 employees)

Industries where small businesses make the greater contribution to GDP include: Construction, Trade, Transportation and Warehousing, FIRE (finance, insurance and real estate) and PSTS (professional, scientific, and technical services).

Mining, oil and gas was the only industry where medium size businesses (50-99 employees) had the greatest positive impact on GDP. This may be a result of high merger activity. According to a study based on a review of the 50 largest Canadian target-supported transactions from June 1, 2010 and May 31, 2011 (Blakes, 2012), 30% of Canadian mergers and acquisitions were in the oil and gas/energy industry and 44% was in mining. 63.8% of establishments in mining, quarrying and oil and gas extraction are in Alberta (Industry Canada, 2011) therefore there is a high degree of merger activity in the oil and gas industry in Alberta, and more specifically, Calgary.

Mirroring the finding with regard to employment, the highest positive coefficient value across all equations for GDP was in the small businesses category in the trade industry. Of all businesses in Calgary, small businesses involved in trade appear to make the proportionately greatest contribution to local economic activity.

5.3 Growth Rate

We have insufficient data to comment on growth patterns among businesses, but this does not prevent us from commenting on overall growth in employment and economic activity by industry in Calgary.

In general, it appears that most small businesses (1-49 employees) are not growing rapidly.

Similarly, large business in educational services, healthcare and public administration have either a growth rate of zero or a very small growth rate indicating strong fiscal restraint in the face of growing population among public services.

Conversely, the average growth rate of large businesses is greater than the average growth rate of all the other sizes. It appears that recent economic growth in Calgary has occurred among businesses which have the least impact upon Calgary GDP and employment. However, this may be illusory; as there are relatively few big businesses in Calgary the percent growth rate may be deceptively high. Additionally, the growth rate may be due to policy changes, for example, the Alberta electricity industry was partially deregulated on January 1, 1996. Since then many new retailers, marketers, wholesalers, generators and various support firms have entered the utilities industry thus skewing the results.

Briefing Note

6.   Summary

Conventional wisdom is that small businesses are strong drivers of the economy. Our research shows that people are the engines of the Calgary economy and that small businesses have a significant impact on employment and GDP owing to the fact that so many Calgarians work in small businesses.

Even so, some business sizes in some industries appear to have a greater impact on the local economy than others. The business sizes and categories which, when growing, have the greatest impact on Calgary employment growth are;

Rank	Industry	Size
1	Trade	1-49
2	Mining, Oil and Gas	50-99
3	Construction	1-49
4	Transportation and Warehousing	1-49
5	Information, Culture and Recreation	100-499

Dominated by small business, the business categories which, when growing, contribute most to Calgary's GDP growth are;

Rank	Industry	Size
1	Trade	1-49
2	Accommodation and Food Services	1-49
3	Transportation and Warehousing	1-49
4	Professional, Scientific and Technical Services	1-49
5	Finance, Insurance, Real Estate and Leasing	1-49

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Appendix

Linear Extrapolation

We start by recognizing that 100% of employees work for some size firm; if we add the job shares of all business sizes together it must sum to 1. Second, we recognize that the share of big business is unknown as it is included in the constant term. We denote this share as X. As our formula for All Industries is expressed in elasticities, we may write the formula for the share of jobs in the economy attributable to all business sizes as:

$$X + (1.713 * X) + (0.7997 * X) + (1.2294 * X) = 1$$

Solving for X we get the share of new jobs that are attributable to big business, X=0.2108. The share of new jobs in Small business is then $(1.713 * X) = 0.36$. Solving for the other business sizes in the equation we yield the table on page 9.

Similar methodology is used to create the table on page 10.

Who We Are

Corporate Economics provides services in four areas: forecasting, information provision, policy analysis and consulting. We also monitor the current economic trends which allows us to develop unique insights on how external events are impacting the local economy and the Municipal government. We are experienced at researching different economic topics and developed reliable methods of forecasting and analysis.

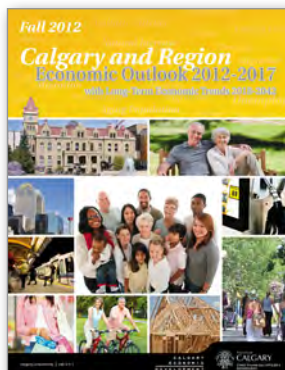For more information, please contact:

Clyde Pawluk
Senior Corporate Economist
403.268.2643
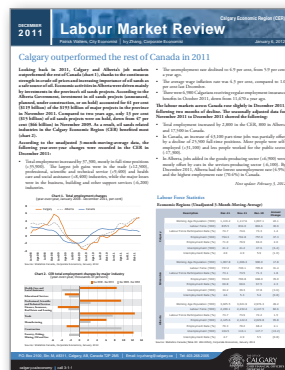clyde.pawluk@calgary.ca

Maria Cho
Summer Economist

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Corporate Research Analyst: Estella Scruggs