Survey on Financing of Small And Medium Enterprises 2004

Methodology

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1 - BACKGROUND INFORMATION

As a result of recommendations made by the MacKay Task Force on the Future of the Canadian Financial Services Sector, Finance Canada, Industry Canada and Statistics Canada have been mandated to initiate a new statistical program to collect information on small and medium business financing. Statistics Canada is surveying these enterprises from across the country to determine the kind of debt, capital lease and equity financing small and medium sized businesses are relying on as well as to gain information on attempts to obtain new financing.

The Survey on Financing of Small and Medium Enterprises is often referred to as the "demand-side" survey on financing of small and medium enterprises (SMEs). An independent survey on the financing of businesses from the supply-side point of view is also being conducted by Statistics Canada on a yearly basis. This paper only discusses the demand-side survey.

In 2000, a pilot survey of approximately 2,000 businesses was conducted for the reference year 1999 to assess the feasibility of the survey approach to collecting such information as well as produce a few national estimates for some of the key questions of interest. As a result of this pilot, many recommendations were made for the implementation of a larger scale production survey. First, significant changes were made to the questionnaire to make it simpler and shorter. Second, some modifications were made as to how the population of SMEs should be defined. Finally, the results of the pilot were used in designing the sample for the first baseline survey with reference year 2000 and the 2001 supplementary survey.

For the 2004 survey, the questions were similar to that of the 2000 and 2001 surveys, but some questions that were not relevant to the specific objectives were removed, while others were added. These changes were in line with the secondary but important objective of the survey to make some improvements and limited additions to survey content and wording, while reducing the time spent on the telephone with the average respondent from 30 minutes to 20 minutes.

This document outlines the methodology used for conducting the production survey on financing of SMEs in 2004 (the second baseline survey).

Note to Users
The survey on financing of small and medium enterprises of 2004 was conducted for firms that were active during the survey period. The reference period for the 2004 survey is the last 12 months from the date of the interview. The survey results did not take into account firms that may have ceased operations due to the lack of financing just prior to

survey taking. The entrepreneurs that may have tried to launch their business and failed to do so during this survey process were also not targeted by this survey. A list of concepts and definitions used in the survey can be found in Appendix A.

2 – SAMPLE DESIGN

2.1 Sampling Frame

The starting point for defining the target population for the survey of SMEs was to include all enterprises that were on the Business Register (BR) Universe file dated August 2004. This database is constructed and adapted, using various types of tax records from the Canada Customs and Revenue Agency and is also updated regularly, using feedback from other business surveys. The BR contains the universe of enterprises in Canada. Once the universe file was created, some enterprises were removed based on auxiliary information that was available from the BR. The following enterprises were excluded from the population:

1- Enterprises with 500 or more employees
2- Enterprises with over $50 million in gross revenue
3- Enterprises coded as being non-profit (for example schools, hospitals, charities)
4- Cooperatives
5- Joint ventures
6- Municipal/Federal and Provincial Government
7- Other industries (NAICS) for which financing is not of interest (see table 6 in Appendix B for list of all NAICS excluded).

Note that other exclusions such as subsidiaries could not be identified based on the frame information. Such companies were screened out at the collection phase. The final sampling frame contained 1,939,780 enterprises.

2.2 Stratification of the Frame

The list frame was stratified according to Finance and Industry Canada's needs and to methodology's recommendations. Since estimates were required by region, industry type, size and age of business, these four variables were used to develop an initial stratification. Number of employees in the enterprise was used to define the size of a business and the age of the business was estimated using the date that the business first appeared on the Business Register. This is only a proxy for the actual age of the business but it was the most accurate information available. Note that the number of employees and the age of business are information collected during the interview and a reclassification based on survey results is done for tabulation purposes.

Industry Canada provided a list of businesses that had loans guaranteed by the Canadian Small Business Financing Act (CSBFA). This list was matched with the sampling frame. In addition to the four stratification variables above, the frame was also stratified by CSBFA participation to ensure good representation of businesses using the CSBFA

guarantee. The region was not included in the stratification for the units that had loans guaranteed by the CSBFA because the sizes of these strata were small.

The regions used for the 2004 survey were changed from the previous 2000 and 2001 SME surveys. This was changed to follow Statistics Canada's standard six regions: Atlantic, Quebec, Ontario, Prairies, British Columbia, and Territories.

The industries were also changed since the 2000 and 2001 surveys. The Agriculture and Primary were combined into one industry group, and a new group, Tourism, was added. The Tourism grouping was of interest to Industry Canada. Table 7 in Appendix B gives a list of the NAICS included in Tourism.

Knowledge-based industries (KBIs) include firms in a number of technology sectors, such as telecommunications carriers, video production, and computer services. It is a re-grouping of Statistics Canada's standard industry categories that is often used by Industry Canada and other organizations. Table 8 in Appendix B lists NAICS codes used for identifying KBIs. "Other industries" is more of a catch-all category that includes everything not included above. Although estimates for that category are not a primary goal, it must be well represented in the sample in order to have good overall estimates for all combined industries.

The categories used for each of the stratification variables and the population counts for each category are given in the tables below.

Table 1a: Population counts by region

Region	Population count
Atlantic	110,612
Quebec	425,109
Ontario	710,353
Prairies	406,557
British Columbia	282,458
Territories	4,691

Table 1b: Population counts by number of employees

Number of employees	Population count
0	1,101,124
1-4	517,251
5-19	227,501
20-99	82,519
100-499	11,385

Table 1c: Population counts by industry

Industry	Population count
Agriculture and Primary	211,957
Manufacturing	92,217
Wholesalers/Retailers	311,426

Professional	219,138
Knowledge Based	112,474
Tourism	165,719
All other	826,849

Table 1d: Population counts by age of business

Age of business	Population count
Less 1 year old	164,163
1 year old or older	1,775,617

Table 1e: Population counts by Canadian Small Business Financing Act participation

CSBFA Participation	Population count
Did not use CSBFA guarantee program	1,935,164
Used CSBFA guarantee program	4,616

Finally, each of the non-CSBFA strata defined above were further stratified in two revenue strata (low and high revenue). The purpose of this is to optimize the sample design in order to produce quantitative estimates from the collected data. Statistics Canada's Generalized Sampling System (GSAM) was used to define the low and high revenue cut-off for all of those strata. The cumulative root f rule was used for that purpose (see Sampling Techniques by Cochran, pages 128-131, 1977). Note that the revenue cutoff within each stratum will not necessarily be the same. Also, although the high revenue strata will tend to have a higher sampling fraction, they will not necessarily be take-all strata. Once all stratification was completed, the sampling frame had a total of 842 strata.

2.3 Allocation of the sample

Based on overall budget available for the survey as well as results from the 2000 and 2001 surveys on SMEs, the national sample size for the survey was determined to be in the neighbourhood of 33,000 enterprises. In 2004, it was recognised that in order to achieve acceptable CVs for various subpopulations (e.g., the population that are both non-borrowers and non-start-ups), it suffices that only a portion answers some of the survey sections. Therefore, respondents received various sections of the telephone interview based on their business characteristics and by the use of random generators that were built into the collection application. By using this "modular approach" the sample could be bosted for groups of high interest (e.g. borrowers), and overall render the sampling produce significantly more efficient. The sample was allocated so that within each of the five employee size groups the domains of interest, industry, age group, region, and CSBFA participation, the estimates would meet the required quality. Revenue was used to find the variability of the enterprises. A 5% coefficient of variance (CV) was considered to be acceptable. The allocation minimizes the overall sample size given the CV requirements for the various domains.

Within each stratum, a minimum sample size of 5 units had to be satisfied to ensure that enough units would represent the stratum. After the initial allocation, all strata sample sizes were boosted to account for an expected response rate of 50%. The final sample size allocated for the survey was 34,509 enterprises.

2.4 Sample selection

Within each stratum, simple random sampling was used to select the units. To reduce response burden to small and medium enterprises, one constraint was to try to minimize the overlap with Statistics Canada's Unified Enterprise Survey (UES).

Of the 34,509 enterprises selected, 146 were identified by Business Register Division (BRD) as being out-of-business before collection started. Therefore, only 34,363 units were sent out on the field.

3 – COLLECTION RESULTS

Collection for this survey was done in two parts. In part 1, for the most part qualitative type questions concerning the businesses latest financing requests were collected using a CATI instrument. Part 1 also includes some quantitative questions related to amount requested and borrowed for each type of financial instruments. For part 2, a questionnaire that collects detailed financial information on liabilities and balance sheet was mailed or/and faxed-out to all businesses that responded to part 1. Telephone follow-up was used to increase response rates.

The reference period for the Part 1 of the survey was the last 12 months from the date of the interview. Part 1 CATI Interiews started in September 2004 and ended in March 2005. The Part 2 questionnaires were mailed out throughout the collection period, after the respondent completed the interview for Part 1.

A summary of collection results for part 1 is given in tables 2 and 3 that follow. The in-scope rate is the proportion of the sample that is considered to be active enterprises that have not been screened out, this also includes non-response units and refusals.

Table 2: Response rate at Data Collection Phase (Part 1)

	In-scope rate (%)	Response rate (%)
Overall	69	55
0 employees	61	49
1-4 employees	77	60
5-19 employees	75	57
20-99 employees	66	54
100-499 employees	56	45

Table 3: Collection results for part 1

34,509 enterprises sampled
10,759 enterprises out of scope
-Unable to locate: 6,636
-Out of business: 1,170
-Screened out: 2,953
23,750 in scope enterprises
-Refusal: 2,727
-Non-response   5,941
-Unable to contact: 2,040
-Completed interviews: 13,042

4 – DATA PROCESSING

The complete records were verified by the Small Business and Special Surveys division (SBSS) to detect inconsistencies and outliers. All data editing and cleaning was also done by SBSS division.

Nearest neighbor donor imputation was used to correct partial non-response present in the returned questionnaires. This imputation method consists in replacing one or more missing values from a respondent, called receiver, by values provided by one or more respondents, called donors. Nearest donor(s) are determined based on size (revenue and number of employees closest to the receiver's) and other characteristics (industry and type of financing requested identical to those of the receiver). The values selected for imputation must pass pre-established edit rules (post-imputation edits). Statistics Canada's generalized system Banff was used to implement imputation. Each cell of the questionnaire has an associated imputation rate, Table 4 gives the minimum and maximum imputation rates of all cells in each section.

Table 4 : Ranges of imputation rate by section (Part 1)

	Imputation rate range (%)		Number of cells in range of imputation rate				
	Minimum	Maximum	< 5%	5-10%	10-15%	15-20%	>20%
Overall	0.0	89.7	131	19	11	10	28
Section B	0.2	6.2	4	1	0	0	0
Section C	0.0	17.4	8	8	0	1	0
Section D	0.0	89.7*	76	6	8	1	20*
Section E	2.0	17.9	10	0	1	5	0
Section F	14.5	27.5	0	0	1	1	1
Section G	0.8	58.3	13	2	0	0	6
Section H	1.2	23.8	20	2	1	2	1

*Note: Question D9 of the CATI (Part 1) contained questions regarding the interest rates and terms for the different types of loans. This question had cells with high rates of imputation. Of the 20 cells with imputation rates of more than 20% in Section D, 15 of the cells are from question D9.

5 – ESTIMATES

Statistics Canada's Generalized Estimation System (GES) was used for producing estimates. Initial sample weights were adjusted to account for refusals and other non-response. A study was done on the 6636 unable to locate (UTL) units and 2040 unable to contact (UTC) units. The research was done to get the status of the enterprises that were not contacted. Resources such as GST, T2, T1 files and the Longitudinal Employment Analysis Program were used to find whether the businesses were "dead" or "alive". Of the 8676 records it was found that 7372 were alive, 1168 were out of business and the remaining 136 cases could not be resolved. The in-scope rate of the survey respondents was applied to the alive units, because it was not known if these units were in-scope or out of scope. The design weights of the responding units were then adjusted to represent the 7372 alive units using the assumed in-scope rates. The 136 unresolved units were treated as non-response. The total target population count is 1,357,348 enterprises.

The response rates and in-scope rates for estimation are given in Table 5. These rates differ from the response rates at the collection phase because of the treatment of the UTL and UTC records. For collection purposes UTL are considered to be out of scope. Treating a proportion of the alive UTLs as in-scope resulted in higher in-scope rates and lower response rates for estimation.

Table 5: Response rate for estimation

	In-scope rate (%)	Response rate (%)
Overall	81	47
0 employees	73	42
1-4 employees	91	51
5-19 employees	85	50
20-99 employees	75	48
100-499 employees	64	40

Estimates were produced for over 100 domains of interest defined based on stratification variables (e.g. region, industry) as well questionnaire variables such as number of employees and age of business.

Finally, for every estimate produces by GES, a quality measure easily interpreted was computed. For totals and averages this measure consists in the CV; estimates with a CV of 25% or higher are given a quality code of F and are not published. For proportions the

measure used is the standard error (which gives the sampling error of this estimate). Proportion estimates with a standard error of 12.5% or higher are given a quality code of F and not published. An estimate was judged to be of good quality if it's CV or standard error and imputation rate were small enough. Estimates with a quality code of F were not published. The following rules based on the standard error were used to assign a measure of quality to all of the estimates of percentages.

Coefficient of variation	Standard error - for percentages	Quality code
Up to 5%	Up to 2.5%	A – Excellent
5% up to 10%	2.5% up to 5%	B – Good
10% up to 15%	5% up to 7.5%	C – Average
15% up to 20%	7.5% up to 10%	D – Mediocre
20% up to 25%	10% up to 12.5%	E – Poor, use with caution
25% or higher	12.5% or higher	F – Not reliable, do not use

NB The measures of quality do not account for the imputation rate. Since imputation rates are usually small, the standard error gives a good image of the estimate's quality.

Each estimate also has a margin of error that corresponds to it. The margin of error and standard error have the same order of magnitude as the estimate. For example, if the estimate is in millions then the margin of error is also in millions.

Confidentiality

To protect respondents' confidentiality, estimates obtained from six observations or less in a domain of interest were not published.

Appendix A – Concepts and Definitions

Small and Medium-sized Enterprises: In this survey, small and medium-sized enterprises are defined as enterprises having less than 500 full-time equivalent employees and a gross revenue of less than 50 million of dollars.

Full time equivalent (FTE) : This concept is used to define the size of a business. All enterprises whose sizes were less than 500 full-time equivalent employees were considered in this survey.

FTE is calculated using this simple formula: number of full-time employees + (total number of part-time employees x 0.5) = FTE.

Full-time employees: Workers whose regular workweek is 30 hours minimum.

A demand or short-term loan: is usually a loan with a maturity of ONE YEAR OR LESS.

A term loan: is a loan intended for medium-term or long-term financing to supply cash to purchase fixed assets (such as machinery, land or buildings) or to renovate business premises. This is usually a loan with a maturity of MORE THAN ONE YEAR.

A mortgage loan: is a loan made on real estate collateral (such as land or buildings), in which a mortgage is given to secure payment of principal and interest. A mortgage is a pledge of designated property as security for a loan. The maturity of this type of loan is generally more than 20 years.

Line of credit (also called an operating loan): is an agreement negotiated between the business and a credit supplier establishing the maximum credit limit against which the business may borrow from the credit supplier.

Credit card: Credit cards such as Visa, MasterCard or American Express allow the holder to charge purchases rather than pay cash. Generally, no interest is charged as long as the monthly statement is paid in full by the due date.

Factoring : A method of financing accounts receivable under which a firm sells its accounts receivable (generally without recourse) to a financial institution (the "factor").

Credit Supplier: is a short term loan lent to the business by their suppliers to purchase input necessary for the production of goods or services.

Capital lease: A capital lease is usually used to finance equipment for the major part of its useful life and there is a reasonable assurance that the lessee will obtain ownership of the equipment by the end of the lease term.

Under legal regulation: a lease or leasing under which a lessor provides equipment to a lessee for payment and that meets one of the following conditions:

(a) the lease or leasing includes a bargain purchase option or provides for a transfer of ownership of the leased equipment to the lessee at the end of its term;
(b) the term of the lease or leasing is greater than 75% of the economic life of the equipment; and
(c) the net present value of the scheduled payments made under the lease or leasing, calculated in accordance with the annual imputed rate of interest used in the calculation of the scheduled payments, is 90% or more of the cost of the equipment on the day the lease or leasing is entered into.

Debt financing: is the borrowing of money by a business for the purpose of obtaining working capital or other funds necessary for operational needs or for the purpose of retiring current or other indebtedness. In other words, debt financing is money a business borrows to conduct its operations. The business must repay the borrowed money in full, usually in instalments, with interest. Many of the businesses started in Canada use financial institutions (banks, trust companies, credit unions and caisses populaires) for debt financing. Other sources include family and friends, suppliers and equipment manufacturers, government agencies and other financing organizations.

Equity financing: includes any financing where investors receive shares of the business ownership or any non-repayable contribution such as grants or subventions received.

Age of the enterprise: the age of the business was estimated using the date that the business was birthed on the Business Register. This is only a proxy for the actual age of the business but it was the most accurate information available. The age of business were divided into groups namely:
-Enterprises of less than a year of existence
-Enterprises of a year and more of existence.

Industry sectors: it is a re-grouping of Statistics Canada's standard industry categories as defined by the North American Industrial Classification System (NAICS) codes.

Appendix B – Additional Tables

Table 6: List of NAICS 2 and NAICS 4 excluded from SME population

NAICS	Description
22	Utilities
52	Finance and Insurance
55	Management of Companies and Enterprises
61	Educational Services
91	Public Administration
5321	Automotive Equipment Rental and Leasing
5324	Machinery and Equipment Rental and Leasing
6214	Out-Patient Care Centres
6215	Medical and Diagnostic Laboratories
6219	Other Ambulatory Health Care Services
6221	General Medical and Surgical Hospitals
6222	Psychiatric and Substance Abuse Hospitals
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals
6242	Community Food and Housing, and Emergency and Other Relief Services

Table 7: NAICS included in Tourism Industry

NAICS	Description
Air Transportation	
4811	Scheduled air transport
4812	Non-scheduled air transport
Rail Transportation	
4821	Rail transportation
Water Transportation	
4831	Deep Sea, Coastal and Great Lakes Water Transportation
4832	Inland Water Transportation
Bus Transportation	
4851	Urban Transit Systems
4852	Interurban and Rural Bus Transportation
4854	School and Employee Bus Transportation
4855	Charter Bus Industry
4859	Other Transit and Group Passenger Transportation

Scenic and Sightseeing Transportation	
4871	Scenic and Sightseeing Transportation, Land
4872	Scenic and Sightseeing Transportation, Water
4879	Scenic and Sightseeing Transportation, Other
Taxicabs	
4853	Taxi and Limousine Service
Vehicle rental and leasing	
5321	Automotive Equipment Rental and Leasing
Hotels	
7211	Traveller Accommodation (except 721114-Motels)
Motels	
721114	Motels
Camping	
721211	RV (Recreational Vehicle) Parks and Campgrounds
Other Accommodation	
721212	Hunting and Fishing Camps
721213	Recreational (except Hunting and Fishing) and Vacation Camps
721198	All Other Traveller Accommodation
Food and Beverage Services	
7221	Full-Service Restaurants
7222	Limited-Service Eating Places
7224	Drinking Places (Alcoholic Beverages)
Recreation and Entertainment	
51213	Motion Picture and Video Exhibition
7111	Performing Arts Companies
7112	Spectator Sports
7115	Independent Artists, Writers and Performers
7121	Heritage Institutions
7131	Amusement Parks and Arcades
7132	Gambling Industries
7139	Other Amusement and Recreation Industries
Travel Services	
5615	Travel Arrangement and Reservation Services

Table 8: KBI Defined by Industry Canada

NAICS	Description
325410	Pharmaceutical and Medical Manufacturing
333310	Commercial and Service Industry Machinery Manufacturing
334110	Computer and Peripheral Equipment Manufacturing
334210	Telephone Apparatus Manufacturing
334220	Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing
334290	Other Communications Equipment Manufacturing
334310	Audio and Video Equipment Manufacturing

334410	Semiconductor and other Electronic Component Manufacturing
334511	Navigational and Guidance Instruments Manufacturing
334512	Measuring, Medical and Controlling Devices Manufacturing
335920	Communication and Energy Wire and cable manufacturing
336410	Aerospace Product and Parts Manufacturing
511210	Software Publishers
512110	Motion Picture and Video Production
512190	Post-Production and Other Motion Picture and Video Industries
513210	Pay and Specialty Television
513220	Cable and Other Program Distribution
513310	Wired Telecommunication Carriers
513320	Wired Telecommunication Carriers (except satellite)
513330	Telecommunications Resellers
513340	Satellite Telecommunications
513390	Other Telecommunications
514210	Data Processing Services
541360	Geophysical Surveying and Mapping Services
541370	Surveying and Mapping (except Geophysical) Services
541510	Computer Systems Design and Related Services
541620	Environmental Consulting Services
541690	Other Scientific and technical Consulting Services
541710	Research and Development in the Physical, Engineering and Life Sciences
541990	All other Professional, Scientific and Technical Services