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SERVICES INDUSTRIES IN THE BUSINESS SECTOR

OF THE CANADIAN ECONOMY

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The focus of this paper is an examination of concepts and statistics necessary to support the measurement of <u>real output</u> of services industries in the business (market) sector of the Canadian economy. Wherever appropriate, the Canadian practice is judged with reference to the guidelines and recommendations released about ten years ago in the Manual on National Accounts at Constant Prices[1] (hereafter referred in this paper as U.N. Manual). There are 34 specific business services industries delineated in the Canadian System of National Accounts (CSNA). These 34 industries have been concorded as closely as possible in terms of the present International Standard Industrial Classification (ISIC) classes - specifically Major divisions 6 to 9 - to make them more comparable with those in other countries. The allocation of CSNA industries to specific ISIC divisions is listed in the attached Appendix A, entitled Business Sector Services, Concordance of ISIC Categories and CSNA Industry Codes.

There are three additional appendices - Appendix B Statistical Profile, Appendix C Constant Price GDP Annual Benchmarks, and Appendix D Constant Price Monthly GDP Estimates - attached to this note. These appendices provide the relevant detail for each of the 34 industries in the business sector services industries of the Canadian economy. Statistical Profile provides information of GDP by Industry in both current and constant (1981) Prices for the years 1961, 1971 and 1985 and their growth rates.

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[1] United Nations, Manual on National Accounts At Constant Prices (Series M No. 64, New York, 1979).

Appendix C on Constant Price GDP Annual Benchmarks provides the following summary details for each of the 34 CSNA industries: a brief description of type of deflators used and a judgemental indicator on the overall quality rating of GDP by Industry. Appendix D on Constant Price Monthly GDP Estimates is similar to Appendix C, with the additional information on type of methodology used for deflation. Readers are referred to these appendices for industry details.

General Methodological Issues of Deflation

It is important to note at the outset that measurement of real output by industry and for the total economy is essentially the construction of a model or logical abstraction of actual transactions. "Volume" or "quantum" is always estimated with reference to time and weights. As we are all familiar with the index number problems associated with changing weights and aggregation, the estimated quantum measure at any level of aggregation is not an unambiguous phenomenon even if one has the most reliable value, price and quantity statistics in detail. This nature of deflation applies to goods, services, industries, whatever methods are used. However, the alternative methods e.g., double or single deflation can be examined from the point of view of their effect on the measures of real output.

i) Double deflation

The Canadian practice conforms to the U.N. recommendation. The UN Manual states: "In an ideal world real product by kind of activity would

always be derived from an input-output table by double deflation" (Page 55). In Canada, the Input-Output Tables form the core of the production accounts. Input-Output tables in their full details are produced annually both in current and constant prices. Real output by industry is produced using the preferred double deflation approach.

In the double deflation approach, one deflates commodity outputs of an industry, its intermediate use of commodity inputs and net indirect taxes. The difference between the deflated values of outputs and the total of commodity inputs and net indirect taxes equals GDP at factor cost in constant prices. The double deflation approach satisfies the requirement of an identity between GDP income and expenditure based estimates in constant prices. However, there are certain important hazards using double deflation for deriving GDP of an industry whose value added makes a small proportion of total gross output.

For such an industry, GDP estimated by double deflation might be erratic because small shifts in the relative prices for intermediate inputs and gross output could translate into big shifts in the resultant value added at constant prices. Here the UN Manual guidelines are not entirely satisfactory; they state: "The solution to this problem, however, may simply be to consolidate industries with very small ratios of value added to gross output with related industries at earlier or later stages of production. In other words, the problem of instability may be solved by aggregation into larger units whose values added are large enough in relation to gross output not to be too sensitive to the effects of changes in prices or technology"

(Page 53). In one year, value added in one industry may be erratic but in the next, a different industry might suffer. Ad-hoc aggregation into large units would disturb the continuity of time series. Thus one needs additional guidelines. In the CSNA, we have resolved this problem as follows: Values added are combined as suggested by the UN. The combined value added is redistributed using gross output or any other indicator as a proxy but the combined value as such for a sub-aggregate remains unchanged. Without this restriction, the above noted GDP identity requirement will not be satisfied.

ii) **Extrapolation of the base year value added**

The UN Manual deals essentially with the problem of "extrapolation" of the base year value added by industry . One can extrapolate value added using constant price gross output, physical quantities of gross output, constant price intermediate inputs, employment etc. These are the various methods used in the CSNA for the Monthly program of real value added at factor cost by industry. To a large extent, the choice of methods used for a particular industry is based on the availability of data.

Changes in employment or hours worked to project base year value added are often used in the CSNA for non-business (non-market) services sector of the economy; this includes government administration, defence, health, education, etc. Even in the business sector, this method has been used for some industries. Readers may refer to Appendix D for industry details. The problem with this method is that an assumption of zero labour productivity is usually made.

Should one prefer deflated output over physical quantities of gross output as a projector of base year value added? The U.N. Manual recommendation is: "The value at constant prices of the goods available in both years should be obtained by deflating the current year value by a price index, rather than by extrapolating the base year value by a volume index..... The justification for this recommendation is that price relatives generally display less variation than quantity relatives. The range of variation of quantity relatives may be anywhere from zero to infinity whereas that for price relatives is much narrower" (pp. 46-47).

If in both the base year and the current year (a) the values of all relevant transactions, (b) the quantities of all goods and services and (c) the prices of all goods and services are recorded, then both choices give the same results and one need not worry about which method one uses. In reality, such a complete recording does not exist i.e. a statistician usually faces the problem of incomplete price and quantity information. Statistician may still prefer quantitites over prices if in his judgement the quantity information is less incomplete than price information.

iii)   Rebasing

It is self evident that the more remote the base year becomes, the less relevant are its prices for purposes of deflating the value of current flows of goods and services. (In the Canadian System of National Accounts, the base year is changed every ten years; however, we are planning to shift to a five year frequency. Our latest base year is 1981).

When the base year is changed, there are two ways in which it may be done in practice. The first method is to revalue not only all years subsequent to the new base year at the new prices but also all the years preceding the new base year in order to have an unbroken series extending on either side of the new base year. The second method is to leave the data for all years up to and including the new base year unchanged and simply to use the new base year prices for valuing all flows of goods and services from the new base year onwards.

CSNA rejects the first method in favour of the second on conceptual grounds. One requires a new base year because the old one is not relevant anymore. But then one can't honestly argue for the first method. But the UN Manual recommends the first method: "It is also recommended that the second method of rebasing should be replaced by the first method whenever resources make it possible" (Page 18). CSNA is fully aware that the conceptual argument becomes rather weak at the boundary. For example, the 1981 base year may be more relevant for 1980 than the 1971 base year. However, for operational reasons and convenience, the boundary period is not dealt differently.

CSNA, for example, preserved the original growth rates of both total GDP and all the published sub-aggregates for the periods 1961-1971 and 1971-81 when the base was shifted to 1981 during the last historical revisions. All the details and totals were rescaled to 1981 base without disturbing the original growth rates. Components do not add to totals (as noticed in the attached Statistical Profile) but history is not rewritten everytime the base year is changed. This issue needs to be re-addressed.

Conceptually Satisfactory

Four industries (i, Monetary and Financial Institution; ii, Insurance; iii, Data Processing Services; and iv, Lotteries and Race Tracks) are considered conceptually unsatisfactory and reasons for their being judged so are detailed in a later section called Conceptually Unsatisfactory. All other industries are considered conceptually satisfactory. The two trade industries (Wholesale Trade and Retail Trade) whose principal output is trade margins, though are considered conceptually satisfactory leave a nagging feeling of uneasiness. Deflation of trade margins has not been resolved internationally or in the CSNA to our entire satisfaction. However, the CSNA approach is worth sharing with others.

Trade Margins

In the CSNA, both the Make Matrix and the Use Matrix of the Annual Input-Output framework are in the preferred approximate basic values as defined in the U.N. SNA (1968). Approximate basic values are usually recorded for Make Matrix but rarely for Use Matrix. The Use Matrix records values at purchaser prices which are equal to approximate basic values plus, where applicable, trade, transport and tax margins. Each recorded purchaser price value has to be disaggregated into its component of approximate basic value and the margins, all delineated separately. The matrix for each margin has the same dimension as the Use Matrix. The trade and transport margins remain part of the intermediate matrix but the tax margins get shifted to the primary inputs matrix to get GDP at market prices. The estimation of margins is done

for the current price annual Input-Output program of CSNA. Indirect taxes are universally deflated using the base year's rates and the transport margins are usually deflated using base year's rate per ton kilometre. However, there are no internationally accepted guidelines for deflating trade margins. The Canadian experience is interesting in the light of the UN Manual statement: "There seems to be no practical or operational way in which the amount of services per unit of goods can be quantified and measured, and it is not possible to make specific recommendations on this point". (Page 88).

Ideally, constant price trade margins should be derived from the difference between the constant price sales of commodities and the constant price cost of these commodities for the trader. But the array of price indexes required include buying and selling price indices by both wholesale and retail trade, by commodity, and these are not compiled.

Calculating margins in constant prices as the product of the margin rate in the base year and the volume of the commodity being traded in subsequent years was rejected on conceptual grounds. Constant margin rates imply constant proportionality between the volume of a commodity being sold and the quantity of trade margin or service being attached to that good. Observation of the market place in action suggests that this is not a good assumption. Marketing techniques change and the quantity of distribution service appears to decrease. Service stations require drivers to pump their own gasoline; free delivery is being discontinued; packaging and display are "economized" to reduce costs.

Another approach tried was to use the margin rates for each year from the current price tables. This approach was used for the 1960's. During this period, the range of variation of price relatives was quite narrow. This approach worked quite well and the results were judged quite satisfactory. The above technique was originally carried into the 1970's with less satisfactory results. The use of current year trade margin rates exacerbated the effects of rapidly changing prices. The next step was to emulate Goldilocks and the Three Bears in search of some formula that seemed "just right". "Just right" in our situation was an implicit price at purchasers' values that most closely approximated observed purchasers' prices. The closest to this proved to be using a margin rate calculated as the average of the given year's rates and the base year's rates from the current price tables.

The implicit price at purchaser value is now calculated in the CSNA as follows:

i)   Approximate basic values are deflated using industry product price index.

ii)   Constant price transport and tax margins are calculated using base year's rates.

iii) Trade margins are deflated using the average of the current year's and base year's rates.

iv)   Sum the above three components to arrive at deflated purchaser price value.

v)   Divide current price counterpart of the above by (iv), which gives implicit purchaser price.

vi) Compare this with recorded purchaser price index such as Consumer Price Index.

vii) If the two are close, we feel just as happy as Goldilocks was.

Indeed the above method of using the average of the two most closely approximated the observed purchaser's price in the 1970's. The results are embedded in our published series, still there is a nagging feeling of uneasiness. This is one area which needs to be further investigated both nationally and internationally, all the more so because trade industries contribute a rather significant part of total GDP; one fourth of GDP within the business services sector of the Canadian economy is contributed by the trade industries and their share may be similar in other internationally advanced economies.

Conceptually unsatisfactory

In the case of an individual good or service, value is expressed as the product of price multiplied by quantity. Quantities are measured in physical units. The quantities may be expressed simply in numbers of items or in graduated units of length, volume or weight. "It is imperative that the physical unit should be identifiable. Otherwise, the concept of price is meaningless" (U.N. Manual, p. 12). However, there are several rather important industries in the business services sector which do not possess a clearly identifiable physical unit. These include Finance, Insurance industries, rental of data processing and activities connected with gambling (such as lotteries and race tracks).

i)   Monetary and Financial Institutions

Monetary and financial institutions provide a variety of services some of which are specifically charged. They include commissions, charges on cheques, etc. There is a fee and the current revenues are estimated based on transactions which involve a number of physical units. The concept of output is clear and in principle output is deflatable. At times these services are bundled into a single product which has no identifiable measure of physical units. Moreover, the gross output of banks as defined in the SNA also includes imputed services which are not directly charged. These equal revenues from interest received from loans less interest paid on deposits. Accordingly, the SNA defined current price GDP of banks (with the above imputation for gross output) remains the same as recorded in the bank books but the issue, of course, is how to deflate such services when there is no identifiable unit of measurement.

In view of the indirect charging for (imputed) services and the bundling of services, it is sometimes suggested that the best way to obtain information on the content of bundles and to delineate additional product detail is to examine the cost structure of the industry. This should help to compute price relatives and detailed weights for some such services. The draft Central Product Classification (CPC) of March 11, 1988 has listed several financial intermediation services. If current revenues and expenses broken down by each of the CPC categories could be collected and the price relatives computed, it might be possible to approximate a measure of real output. But the success of this approach depends on solving the conceptual

problem of how to allocate profits to each of the many services provided by banks; without allocation of profit, the components of gross output are not exhausted.

The UN Manual (page 92) recommended another approach to improve upon the input measures: "Although it may not be possible to obtain a sufficiently comprehensive range of indicators to give an adequate coverage of the entire field of banking, selective and detailed case studies of labour productivity in certain areas of banking seem a promising line of investigation and to offer the prospect of improving on input measures which make no allowance whatsoever for increased productivity". The detailed and selective studies of labour productivity are time consuming, costly and probably very difficult to make them representative of the entire banking sector. The UN suggestion has not been followed in the CSNA work program. The UN Manual makes an identical suggestion for insurance output and it has not been followed for the same reasons as those for banking.

It is quite possible and appropriate that we collectively (i.e. all participating organizations/countries of the Voorburg Group) formulate terms of reference of selective studies for both banking and insurance industries and then distribute them by organization/country. We are aware that another country's productivity study may be inappropriate for incorporation into the national program. However, out of this might emerge a common approach which is cost effective and which adds to our knowledge of this important, growing and increasingly internationalized sector of our economies.

The Canadian SNA practice to deflate imputed bank services for the annual program is to obtain details on various kinds of loans and on their respective interest rates as well as details on the various kinds of deposits and on their interest rates. This is followed by an attempt to match as closely as possible each category of loan with a "corresponding" deposit category. The difference between the deposit rates and the loan rate is estimated to be the margin that the financial institutions charge and in principle these should be equal to the measurement of imputed services of banks. For current years the base year margin rates are applied to the corresponding loans by category to measure the deflated output of imputed services. The uneasiness with this practice derives from the fact that the calculated labour productivity measures are volatile; sometimes they do not correspond to common sense observations in the market.

ii)   Insurance Industries

Insurance industries share some of the same problems as Financial institutions. The current SNA convention is to set the value of the service produced for property and casualty insurance as the difference between claims and premiums. However, the level of premiums is probably established so as to take into account the investment income earned on the policy reserves of the insurer. Moreover, the present SNA defined value of insurance output does not have an identifiable unit of measurement.

The CSNA practice is to deflate both the premium income of life insurance and the premium income of property and automobile insurance by the

Consumer Price Index (CPI) and to extrapolate the base premium income of accident and sickness insurance by the number of persons covered. The labour productivity measures resulting from the above calculations are as volatile as those calculated for the Finance industries.

iii)   Data Processing Services

Data processing services, similar to banking services are sold as "bundles" or "packages" without identifiable physical units of measurement. The underlying services are changing rapidly and are not amenable to an easy solution. In areas of data processing services, we have simply calculated implicit index of inputs with all the weaknesses embedded into them.

iv)   Lotteries and Race Tracks

The output of lottery business is measured as the difference between sales of lottery tickets and the prizes. It has no physical unit of measurement. In the CSNA, the output is deflated by the overall CPI for goods and services.

Industries which are deflated by conceptually unsatisfactory methods make up about 15 percent of GDP of business services sector of the Canadian economy, or about 6 percent of total GDP in Canada. They are primarily in the finance and insurance sector of the economy.

Overall Quality Assessment

The conceptual foundation for output measures of individual industries may be sound or weak, the statistical foundation of such measures may be good or weak, yet the national accounts must be comprehensive. An estimate must be made for each item that appears in an accounting system. The system of national accounts could not be established in practice if it were restricted to those components which were soundly based on accurately recorded facts. Inevitably, published statistics will include estimates for which evidence is relatively weak. But, even a relatively weak series is strengthened after it is analysed, adjusted and generally put through the checks and balances of the national accounts. It is, nonetheless, the duty of statisticians to warn users of the weaknesses of the underlying statistics. After all, the users must not (except at their own risk) draw substantial conclusions about the economy from differences between components, or differences in the size of a given component between one period and another if such differences may be due wholly or mainly to errors of measurement.

SNA estimates are synthetic. They use series based on random samples, universe collection, projections based on circumstantial evidence plus adjustment for undercoverage, all constrained by the checks and balances of the system. To date, we have not found a way of summarizing the quality attributes of the basic data and the quality of the resulting SNA estimates in an objective manner. It is, however, possible from knowledge of the data and concepts to form very rough and partly subjective judgements about the range

of reasonable doubt that should be attached to such estimates. Appendix C
includes such quality ratings for the annual estimates.

On a scale of 1 to 3, rating of 1 is most reliable. All services
industries whose output measures are conceptually unsatisfactory carry a
rating of 3. In addition, all services industries for which there is no
substantial annual data carry the rating 3; this sub-set includes industries
which are not covered on a regular basis not even quinquennially. A rating of
1 is attached to those industries where the undercoverage is minimal; very
good commodity output detail exists; and the intermediate inputs are well
specified. Furthermore, to stay within the rating of 1, the deflators of the
main outputs or inputs of an industry are based on price indices of
commodities directly covered in a price survey or the deflators are
constructed from data on quantities and values from production surveys or
other records in which the information is adequate in coverage and detail. In
between the two ratings are all other industries. These carry the rating 2.

An overall quality assessment for constant price GDP is provided for
each of the 34 services industries in Appendix C. It is worth noting that a
few transport industries (air transport and urban transit system) have the
quality rating of 1. Eight industries have a rating of 3 and twenty four
industries have a middle rating of 2. In terms of GDP, two percent is of
level 1 quality; 74 percent of level 2; and 24 percent of level 3 (of which
owner occupied dwellings contribute more than half).

Constant Price Monthly GDP Estimates

The concept underlying constant price GDP for both annual benchmarks and monthly estimates is identical. The weaknesses or strengths observed for annual benchmarks apply equally well to monthly estimates. The reader is referred to Appendix D, Constant Price Monthly GDP Estimates for details by 34 business sector services industries. This Appendix, like Appendix C, includes CSNA industry codes (CSNA industry titles are omitted to save space); a brief description of principal deflators used, and a judgemental indicator for overall quality assessment. It adds one extra feature on the type of methodology used for deflation. For the annual benchmarks, double deflation is used throughout. Monthly estimates by definition extrapolate the base year or the benchmark year value added. This extrapolation may take several distinct features - value added for some industries may be extrapolated using volume measures based on physical quantities; for other industries the extrapolation may use volume measure obtained through deflation; and still in other industries, value added is extrapolated using the number of workers. The method used for each industry is listed in the appendix.

The statistical data base required for estimating constant price GDP by Industry varies according to the methods used. For a large number of industries, the number of workers is used to project value added. This makes productivity analysis virtually impossible. Fortunately in terms of GDP, only ten percent of industries use this proxy. In fact the number of workers is used almost exclusively for constant price GDP estimation for the non-business services sector of the Canadian economy.

The overall quality assessment for monthly measures is either the same or lower compared with the rating for the annual measures. The criteria for examining quality are similar to the annual program. Moreover, there are twelve industries (out of the total of 34 business services industries) for which the quality of the underlying statistics is judged to be so low in the monthly program that it was decided not to release their estimates separetely. These twelve industries contribute about 15 percent of GDP of the business services industries or about 6 percent of the overall economy. The quality assessment for these industries is noted as "Not Published" (NP) in Appendix D. NP rating is of course, lower than rating of 3. Reader is referred to Appendix D for quality rating of each industry.

Concluding remarks

We have listed four industries whose output measures are conceptually deficient. An additional four industries are listed which have a poor statistical base for the annual measures. These eight industries are: SNA Industry Code 137 Banks, Credit Unions and Other Deposit Institutions; 139 Insurance Industries; 142 Other Business Services Industries (Including Data Processing); 150 Other Amusement and Recreational Services (Including Lotteries and Race Tracks); 124 Taxicab Industry; 126 Highway and Bridge Maintenance; 142 Owner Occupied Dwellings; and 145 Educational Service Industries. The first four are conceptually deficient and the last four are statistically deficient. Other countries with similar structure to Canada may have an almost identical list.

Trade industries are also deficient in many countries but the Canadian practice may contribute to an improvement on the current condition. Issues relating to rebasing and double deflation need to be readdressed and again here the Canadian practice might be worth considering. The Canadian practice for deflating banking imputed services, though deficient, might be an improvement over the recommendations included in the 1979 UN Manual.

APPENDICES

APPENDIX A
BUSINESS SECTOR SERVICES
CONCORDANCE OF ISIC CATEGORIES AND CSNA INDUSTRY CODES

ISIC	CSNA Industry Codes
Major Division 6 - Wholesale and Retail Trade and Restaurants and Hotels	
Division 61 - Wholesale Trade	135 - Wholesale Trade Industries
Division 62 - Retail Trade	136P* - Retail Trade Industries
Division 63 - Restaurants and Hotels	148 - Accommodation and Foods Services Industries
Major Division 7 - Transport, Storage and Communication	
Division 71 - Transportation Storage	
Major Group 711 - Land Transport	119 - Railway Transport and Related Services
	121 - Truck Transport Industries
	122 - Urban Transit System Industry
	123 - Interurban and Rural Transit Systems
	124 - Taxicab Industry
	126 - Highway and Bridge Maintenance
	127 - Pipeline Transport Industry
Major Group 712 - Water Transport	120 - Water Transport and related Services
Major Group 713 - Air Transport	118 - Air Transport and Services Incidental
Major Group 719 - Services Allied to Transport	125 - Other Transport and Services Incidental to Transport
	128 - Storage and Warehousing Industry

* P stands for part of the industry. For example, other part of SNA industry 136 is concorded with ISIC Division 95.

ISIC	CSNA Industry Codes
Division 72 - Communication	130 - Telecommunication Carriers and Other Telecommunication Ind. 131 - Postal Service Industry

Major Division 8 - Financing, Insurance, Real Estate and Business Services

Major Groups: 810, 820 and 831 - Financial Institutions, Insurance and Real Estate	137 - Banks, Credit Unions and Other Deposit Institutions 138 - Trust, Other Finance and Real Estate 139 - Insurance Industries 140 - Govt. Royalties on Natural Resources 141 - Owner Occupied Dwellings
Major Group 832 - Business Services	142 - Other Business Service Industries 143 - Professional Business Services 144 - Advertising Services
Major Group 833 - Machinery and Equipment Rental and Leasing	154P - Miscellaneous Service Industries

Major Division 9 - Community, Social and Personal Services

Division 92 - Sanitary and Similar Services	154P - Miscellaneous Service Industries
Major Group 931 - Education Services	145 - Educational Service Industries
Major Group 933 - Medical, Dental, Other Health and Veterinary Services	146 - Hospitals 147 - Other Health Services
Division 94 - Recreational and Cultural Services	129 - Telecommunication Broadcasting Ind. 149 - Motion Pictures and Video Industries 150 - Other Amusement and Recreational Services 154P - Miscellaneous Service Industries

ISIC	CSNA Industry Codes
Division 95 - Personal and Household Services	136P - Retail Trade 151 - Laundries and Cleaners 152 - Other Personal Services 153 - Photographers 154P - Miscellaneaous Service Industries

APPENDIX B

Statistical Profile - Business Sector, Services Industries

	$ Millions			Proportion of Total Economy			Growth Rates	
	1961	1971	1985	1961	1971	1985	1961-85	1971-85
Total Economy								
GDP Constant 1981 Prices	125877.3	214902.9	353253.8	100.0	100.0	100.0	4.4	3.6
GDP Current Prices	36119.5	85236.9	431589.0	100.0	100.0	100.0	10.9	12.3
Total Goods Industries								
GDP Constant 1981 Prices	55330.8	92842.6	139222.4	44.0	43.2	39.4	3.9	2.9
GDP Current Prices	16142.1	34166.4	163587.0	44.7	40.1	37.9	10.1	11.8
Total Service Industries								
GDP Constant 1981 Prices	71009.4	122910.4	214031.4	56.4	57.2	60.6	4.7	4.0
GDP Current Prices	19977.4	51070.5	268002.0	55.3	59.9	62.1	11.4	12.6
Non-Business Services								
GDP Constant 1981 Prices	26989.5	44393.2	61267.5	21.4	20.7	17.3	3.5	2.3
GDP Current Prices	5153.1	15623.5	78744.0	14.3	18.3	18.2	12.0	12.2
Business Services								
GDP Constant 1981 Prices	45502.8	80122.4	152763.9	36.1	37.3	43.2	5.2	4.7
GDP Current Prices	14824.3	35447.0	189258.0	41.0	41.6	43.9	11.2	12.7

Notes

1) Components in constant prices do not add to totals because the original growth rates of both the components and the totals are preserved for the back period when rebasing is done.

2) Growth rates are annual compound rates of growth using the beginning and the terminal years of the reference period.

	1961	1971	1985	Proportion of Business Services			Growth Rates	
				1961	1971	1985	1961-85	1971-85
Business Services								
GDP Constant 1981 Prices	45502.8	80122.4	152763.9	100.0	100.0	100.0	5.2	4.7
GDP Current Prices	14824.3	35447.0	189258.0	100.0	100.0	100.0	11.2	12.7
118 Air Transport & Services Incid.								
GDP Constant 1981 Prices	515.7	1047.2	2452.9	1.1	1.3	1.6	6.7	6.3
GDP Current Prices	150.7	511.6	2517.2	1.0	1.4	1.3	12.4	12.1
119 Railway Transport & Rel. Services								
GDP Constant 1981 Prices	1297.4	2521.0	3206.8	2.9	3.1	2.1	3.8	1.7
GDP Current Prices	881.9	1325.0	3658.9	5.9	3.7	1.9	6.1	7.5
120 Water Transport & Rel. Services								
GDP Constant 1981 Prices	749.1	1241.0	1407.6	1.6	1.5	0.9	2.7	0.9
GDP Current Prices	228.1	410.4	1363.2	1.5	1.2	0.7	7.7	9.0
121 Truck Transport Industries								
GDP Constant 1981 Prices	1672.6	2713.0	4839.5	3.7	3.4	3.2	4.5	4.2
GDP Current Prices	424.5	1145.2	5072.0	2.9	3.2	2.7	10.9	11.2
122 Urban Transit System Industry								
GDP Constant 1981 Prices	730.2	737.8	764.9	1.6	0.9	0.5	0.2	0.3
GDP Current Prices	129.3	284.1	1401.8	0.9	0.8	0.7	10.4	12.1
123 Interurban & Rural Transits Systems								
GDP Constant 1981 Prices	81.1	141.6	125.6	0.2	0.2	0.1	1.8	-0.9
GDP Current Prices	34.5	73.5	189.2	0.2	0.2	0.1	7.3	7.0
124 Taxicab Industry								
GDP Constant 1981 Prices	214.8	303.9	514.8	0.5	0.4	0.3	3.7	3.8
GDP Current Prices	70.6	137.8	620.3	0.5	0.4	0.3	9.5	11.3
125 Other Transport & Serv. To Transp.								
GDP Constant 1981 Prices	242.7	352.1	1021.7	0.5	0.4	0.7	6.2	7.9
GDP Current Prices	51.1	147.7	1275.6	0.3	0.4	0.7	14.3	16.6

		1961	1971	1985	Proportion of Business Services			Growth Rates	
					1961	1971	1985	1961-85	1971-85
126	Highway & Bridge Maintenance Ind.								
	GDP Constant 1981 Prices	150.3	165.5	72.1	0.3	0.2	0.0	-3.0	-5.8
	GDP Current Prices	23.4	37.5	83.6	0.2	0.1	0.0	5.4	5.9
127	Pipeline Transport Industries								
	GDP Constant 1981 Prices	352.5	1110.6	1495.0	0.8	1.4	1.0	6.2	2.1
	GDP Current Prices	155.3	389.4	2033.8	1.0	1.1	1.1	11.3	12.5
128	Storage & Warehousing Industries								
	GDP Constant 1981 Prices	338.4	452.3	483.0	0.7	0.6	0.3	1.5	0.5
	GDP Current Prices	107.2	191.2	589.1	0.7	0.5	0.3	7.4	8.4
129	Telecommunication Broadcasting Ind.								
	GDP Constant 1981 Prices	230.8	573.1	1295.5	0.5	0.7	0.8	7.5	6.0
	GDP Current Prices	100.5	315.6	1926.4	0.7	0.9	1.0	13.1	13.8
130	Telecommunication Carriers & Oth.								
	GDP Constant 1981 Prices	925.1	2206.1	7153.1	2.0	2.8	4.7	8.9	8.8
	GDP Current Prices	631.4	1605.2	8662.3	4.3	4.5	4.6	11.5	12.8
131	Postal Service Industry								
	GDP Constant 1981 Prices	507.0	811.5	1372.4	1.1	1.0	0.9	4.2	3.8
	GDP Current Prices	133.8	340.5	2229.6	0.9	1.0	1.2	12.4	14.4
135	Wholesale Trade								
	GDP Constant 1981 Prices	5121.9	9896.3	18078.0	11.3	12.4	11.8	5.4	4.4
	GDP Current Prices	1739.7	4269.3	20528.8	11.7	12.0	10.8	10.8	11.9
136	Retail Trade								
	GDP Constant 1981 Prices	8877.2	14809.2	22381.2	19.5	18.5	14.7	3.9	3.0
	GDP Current Prices	2797.2	6081.2	26132.4	18.9	17.2	13.8	9.8	11.0
137	Banks,Credit Union & Oth. Dep. Ins.								
	GDP Constant 1981 Prices	1215.5	2373.7	3993.9	2.7	3.0	2.6	5.1	3.8
	GDP Current Prices	414.5	1086.1	6852.1	2.8	3.1	3.6	12.4	14.1

	1961	1971	1985	Proportion of Business Services			Growth Rates	
				1961	1971	1985	1961-85	1971-85

138   Trust,Other Finance & Real Est.

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	5552.6	9537.2	17041.1	12.2	11.9	11.2	4.8	4.2
GDP Current Prices	1760.0	4098.1	22695.6	11.9	11.6	12.0	11.2	13.0

139   Insurance Industries

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	1546.2	1273.2	2038.9	3.4	1.6	1.3	1.2	3.4
GDP Current Prices	390.4	747.8	1715.9	2.6	2.1	0.9	6.4	6.1

140   Gvt. Royalties on Nat. Resources

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	2140.6	4397.7	6490.7	4.7	5.5	4.2	4.7	2.8
GDP Current Prices	154.0	387.0	6095.1	1.0	1.1	3.2	16.6	21.8

141   Owner Occupied Dwellings

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	6134.8	9495.9	20487.0	13.5	11.9	13.4	5.2	5.6
GDP Current Prices	1782.7	4137.3	26879.0	12.0	11.7	14.2	12.0	14.3

142   Other Business Service Industries

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	117.4	715.5	5617.5	0.3	0.9	3.7	17.5	15.9
GDP Current Prices	76.8	579.5	6311.7	0.5	1.6	3.3	20.2	18.6

143   Professional Business Services

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	1887.9	3638.7	6055.2	4.1	4.5	4.0	5.0	3.7
GDP Current Prices	429.3	1355.1	7916.6	2.9	3.8	4.2	12.9	13.4

144   Advertising Services

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	213.0	283.6	672.9	0.5	0.4	0.4	4.9	6.4
GDP Current Prices	56.1	133.1	1005.6	0.4	0.4	0.5	12.8	15.5

145   Educational Service Industries

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	334.5	345.2	725.9	0.7	0.4	0.5	3.3	5.5
GDP Current Prices	59.5	145.5	833.2	0.4	0.4	0.4	11.6	13.3

146   Hospitals

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	201.9	242.5	129.7	0.4	0.3	0.1	-1.8	-4.4
GDP Current Prices	14.4	65.6	175.3	0.1	0.2	0.1	11.0	7.3

	1961	1971	1985	Proportion of Business Services			Growth Rates	
				1961	1971	1985	1961-85	1971-85

147   Other Health Services

	1961	1971	1985	1961	1971	1985	1961-85	1971-85
GDP Constant 1981 Prices	1439.6	3079.3	6021.6	3.2	3.8	3.9	6.1	4.9
GDP Current Prices	444.5	1453.5	8322.8	3.0	4.1	4.4	13.0	13.3

148   Accomodation & Food Service Ind.

GDP Constant 1981 Prices	3450.7	4913.0	7663.9	7.6	6.1	5.0	3.4	3.2
GDP Current Prices	853.8	2093.4	10440.8	5.8	5.9	5.5	11.0	12.2

149   Motion Picture & Video Industries

GDP Constant 1981 Prices	314.3	258.5	273.3	0.7	0.3	0.2	-0.6	0.4
GDP Current Prices	49.0	120.4	336.6	0.3	0.3	0.2	8.4	7.6

150   Other Amusement & Recreational Ser.

GDP Constant 1981 Prices	277.4	661.7	1809.3	0.6	0.8	1.2	8.1	7.4
GDP Current Prices	70.2	299.6	2692.5	0.5	0.8	1.4	16.4	17.0

151   Laundries & Cleaners

GDP Constant 1981 Prices	471.1	533.3	661.5	1.0	0.7	0.4	1.4	1.6
GDP Current Prices	133.1	213.3	838.4	0.9	0.6	0.4	8.0	10.3

152   Other Personal Services

GDP Constant 1981 Prices	918.3	1109.9	2279.3	2.0	1.4	1.5	3.9	5.3
GDP Current Prices	208.2	421.3	2743.9	1.4	1.2	1.4	11.3	14.3

153   Photographers

GDP Constant 1981 Prices	32.4	42.4	196.6	0.1	0.1	0.1	7.8	11.6
GDP Current Prices	15.3	28.6	225.2	0.1	0.1	0.1	11.9	15.9

154   Misc. Service Industries

GDP Constant 1981 Prices	950.7	1958.1	3941.2	2.1	2.4	2.6	6.1	5.1
GDP Current Prices	253.0	816.9	4893.6	1.7	2.3	2.6	13.1	13.6

APPENDIX C

CONSTANT PRICE GDP FOR ANNUAL BENCHMARKS, BUSINESS SERVICES INDUSTRIES, CANADA

(Double deflation is the method used throughout)

CSNA Industry Code	CSNA Industry Title	Brief Description of Principal Deflators	Overall Quality Assessment
118	Air Transport & Services Incidental	Passenger Kilometres by class	1

119	Railway Transport & Rel. Services
	  - Passengers
	  - Freight
		
		Consumer Price Index
		Rate per ton kilometre
			2

120	Water Transport & Rel. Services
	  - Freight
	  - Incidental Services
		
		Freight rate indexes
		Base Year rates
			2

121	Truck Transport Industries - Freight	 Rate per ton kilometre	2
122	Urban Transit System Industry	Consumer Price Index	1
123	Interurban & Rural Transit Systems	Consumer Price Index	2
124	Taxicab Industry	Consumer Price Index	3

125	Other Transport & Serv. To Transp.
	Other Transport
	  - School Bus
	  - Chartered Buses
	Services Incidental
	  - Parking
	  - Travel Agencies
	  - Freight Forwarders
		
		Consumer Price Index
		Consumer Price Index
		
		Consumer Price Index
		Consumer Price Index
		Truck Transportation Deflator
			2

126	Highway & Bridge Maintenance Ind.	Truck Transport Price Index	3
127	Pipeline Transport Industries	Volume Indexes of Goods Transported & Base Year Rate	2

APPENDIX C

CONSTANT PRICE GDP FOR ANNUAL BENCHMARKS, BUSINESS SERVICES INDUSTRIES, CANADA

(Double deflation is the method used throughout)

CSNA Industry Code	CSNA Industry Title	Brief Description of Principal Deflators	Overall Quality Assessment
128	Storage & Warehousing Industries - Storage - Warehousing	 Volume Indexes by Type of Grain and Type of Elevator & Base Year Rates Rent Deflator	2
129	Telecommunication Broadcasting Ind. - Advertising - Cable	 Rates for Prime Time Advertising Consumer Price Index	2
130	Telecommunication Carriers & Other	Volume Indicators	2
131	Postal Service Industry	Volume Indicators	2
135	Wholesale Trade Industries - Margins - Other Wholesale Trade	 Average of Base and Current Year Rates Implicit Price Index of Margins	2
136	Retail Trade Industries - Margins - Other Retail Trade	 Average of Base and Current Year Rates Implicit Price Index of Margins	2
137	Banks, Credit Union & Oth. Dep. Inst - Banks - Credit Unions, etc.	 Deflated Bank Loans & Base Year Gross Margin Rate by Category Bank Deflator	3

APPENDIX C

CONSTANT PRICE GDP FOR ANNUAL BENCHMARKS, BUSINESS SERVICES INDUSTRIES, CANADA

(Double deflation is the method used throughout)

CSNA Industry Code	CSNA Industry Title	Brief Description of Principal Deflators	Overall Quality Assessment
138	Trust, Other Finance & Real Estate - Imputed Interest - Non-Banks - Stock and Bond Commissions - Real Estate Commissions - Rents - Residential and Other	 Bank Deflator Base Year Commission Rates & Deflated Value of Stocks Traded Base Year Commission Rate & Deflated Sales Base Year Rent & Index of Stock of Dwellings	2

139	Insurance Industries
	- Life
	- Non-Life
	    - Property and Automobile
	    - Accident and Sickness
		
		Deflated Premium Income - CPI
		
		Deflated Premium Income - CPI
		Number of Persons Covered
			3

140	Gvt. Royalties On Nat. Resources	Base Year Rate & Deflated Gross Output	2
141	Owner Occupied Dwellings	Index of Stock of Dwellings and Base Year Imputed Rent	3
142	Other Business Service Industries - Rental of Data Processing Equip. - Miscellaneous Business Services	 Implicit Price Index of Inputs Index of Average Weekly Earnings	3
143	Professional Business Services - Legal - Accountants - Architects - Engineers	 Output Activities & Base Year Fees Index of Average Weekly Earnings Index of Average Weekly Earnings Index of Average Weekly Earnings	2

APPENDIX C

CONSTANT PRICE GDP FOR ANNUAL BENCHMARKS, BUSINESS SERVICES INDUSTRIES, CANADA

(Double deflation is the method used throughout)

CSNA Industry Code	CSNA Industry Title	Brief Description of Principal Deflators	Overall Quality Assessment

144	Advertising Services
	  - Print Media
	  - Radio and Television
		
		Advertising Rates Per Line
		Prime Time Rates
			2

145	Educational Service Industries
	  - Private Schools
	
	  - Other Education and Cultural
	    Services
		
		Implicit Price Index of Operating
		  Expenditures of Universities
		Consumer Price Index
			3

146	Hospitals	Index of Employment	2

147	Other Health Services
	  - Doctors
	
	  - Dentists
	  - Special Care Facilities
	
	  - Other Health Care
		
		Index of Provincial Government
		  Remuneration Rates
		Consumer Price Index
		Index of Employment Applied to
		  Hospital Labour Income
		Consumer Price Index
			2

148	Accommodation & Food Service Ind.
	  - Accommodation
	  - Meals
	  - Service Margin on Alcoholic
	    Beverages
		
		Consumer Price Index
		Consumer Price Index
		Index of Deflated Sales to Res-
		  taurants and Hotels & Base
		  Year Margin
			2

149	Motion Picture & Video Industries
	  - Exhibition
	  - Production and Distribution
		
		Consumer Price Index
		Consumer Price Index
			2

APPENDIX C

CONSTANT PRICE GDP FOR ANNUAL BENCHMARKS, BUSINESS SERVICES INDUSTRIES, CANADA

(Double deflation is the method used throughout)

CSNA Industry Code	CSNA Industry Title	Brief Description of Principal Deflators	Overall Quality Assessment

150	Other Amusement & Recreational Serv.
	  - Theatre
	  - Sports and Recreation
	  - Race Track and Gambling
	  - Lotteries
		
		Consumer Price Index
		Consumer Price Index
		Attendance
		Adjusted Consumer Price Index
			3

151	Laundries & Cleaners	Consumer Price Index	2

152	Other Personal Services
	  - Barbers and Beauty Salons
	  - Funeral Services
	
	  - Day Care Centres
		
		Consumer Price Index
		Consumer Price Index; Average Weekly Earnings & Output Deflator Combined
		Consumer Price Index
			2

153	Photographers	Index of Average Weekly Earnings	2

154	Misc. Service Industries
	  - Repair Services
	
	  - Rental of Office Equipment
	
	  - Services to Building and Dwellings
	  - Rental of Automobiles and Trucks
	  - Rental of Other Machinery and Equipment
		
		Consumer Price Indexes and Indexes of Average Weekly Earnings
		Price Index for Machinery and Equipment for Commercial Sector
		Index of Average Weekly Earnings of Janitors
		Consumer Price Index
		Machinery and Equipment Price Index
			2

APPENDIX D

CONSTANT PRICE MONTHLY GDP ESTIMATES, BUSINESS SERVICES INDUSTRIES, CANADA

(Methodology used is extrapolation of base year or benchmark year value added)

CSNA Industry Code	Extrapolation of Base Year or Benchmark Year Value Added By	Brief Description of Principal Deflators	Overall Quality Assessment
118	Volume measure based on physical quantities	Passenger-kilometers by class and goods-ton kilometers	1
119	Volume measure based on physical quantities and deflation of other revenues	Tons-kilometers of carloadings for freight and CPI for passenger fares	2
120	Volume measure based on physical quantities	Quantities loaded & unloaded	3
121	Volume measure obtained through deflation	Manufacturing shipments and wholesale trade sales, deflated with IPPIs	3
122	Volume measure obtained through deflation	CPI for urban bus fare	1
123	Volume measure obtained through deflation	CPI for interurban bus fare	2
124	Number of workers		Not Published
125	Last benchmark value		NP
126	Number of workers		NP
127	Volume measure based on physical quantities	Cubic meters kilometers of oil and gas	2
128	Volume measure based on physical quantities	Flows and stock of grains	3

APPENDIX D

CONSTANT PRICE MONTHLY GDP ESTIMATES, BUSINESS SERVICES INDUSTRIES, CANADA

(Methodology used is extrapolation of base year or benchmark year value added)

CSNA Industry Code	Extrapolation of Base Year or Benchmark Year Value Added By	Brief Description of Principal Deflators	Overall Quality Assessment
129	Volume measure based on quantities of services and deflated advertising revenues	Revenues deflated with advertising rate index and number of subscribers	2
130	Volume measure based on quantities	Number of lines for local service and number of long distance calls	2
131	Volume measure obtained through deflation	CPI for 1st class letter	NP
135	Volume measure obtained through deflation	Industry Product Price Indexes and import price indexes for selected commodities	2
136	Volume measure obtained through deflation	CPI by commodity	2
137	Volume measure obtained through deflation	Assets deflated with total CPI adjusted with rate of return	3
138	Volume measure obtained through deflation	Stock price indexes, total CPI and number of houses sold for real estate commissions	3
139	Volume measure based on number of policies sold and other revenues deflated	Total CPI	3
140	Volume measure based on physical quantities	Quantities of various natural resources extracted	2

APPENDIX D

CONSTANT PRICE MONTHLY GDP ESTIMATES, BUSINESS SERVICES INDUSTRIES, CANADA

(Methodology used is extrapolation of base year or benchmark year value added)

CSNA Industry Code	Extrapolation of Base Year or Benchmark Year Value Added By	Brief Description of Principal Deflators	Overall Quality Assessment
141	Volume measure based on physical quantities	Stock of dwellings adjusted for completions	3
142	Number of workers		NP
143	Volume measure based on number of legal services and number of workers for the other services		3
144	Number of workers		NP
145	Number of workers		3
146	Number of workers		3
147	Number of workers		NP
148	Volume measure based on physical quantities	Number of rooms adjusted by occupancy rate	3
	Volume measure based on deflated revenues	CPI for meals	2
149	Number of workers		NP
150	Volume measure based on number of people attending events and deflated revenues for loteries	Number of people at race tracks and professional sport events; total CPI for lotteries	NP
151	Number of workers		3
152	Number of workers		NP

APPENDIX D

CONSTANT PRICE MONTHLY GDP ESTIMATES, BUSINESS SERVICES INDUSTRIES, CANADA

(Methodology used is extrapolation of base year or benchmark year value added)

CSNA Industry Code	Extrapolation of Base Year or Benchmark Year Value Added By	Brief Description of Principal Deflators	Overall Quality Assessment
153	Number of workers		NP
154	Number of workers		NP