The growing importance of the service industries: The need for sub-annual indicators

Institutional Review Draft

Not for citation

March 14, 2005

Jerry Fiori, Larry McKeown & Nathalie Taktek
Service Industries Division
Statistics Canada
Abstract

This paper reports on the potential development of sub-annual indicators for selected service industries using Goods and Services Tax (GST) data. The services sector is now of central importance to advanced economies; however, our knowledge of this sector remains incomplete, partly due to a lack of data. The Voorburg Group on Service Statistics has been meeting for almost twenty years to develop and incorporate better measures for the services sector. Despite this effort, many sub-annual economic measures continue to rely on output data for the goods-producing sector and, with the exception of distributive trades, on employment data for service industries.

The development of sub-annual indicators for service industries raises two questions regarding the national statistical program. First, is there a need for service output indicators to supplement existing sub-annual measures? And second, what service industries are the most promising for development? The paper begins by reviewing the importance of service industries and how they behave during economic downturns. Next, it examines considerations in determining which service industries to select as GST-based, sub-annual indicators. A case study of the accommodation services industry serves to illustrate improving timeliness and accuracy. We conclude by discussing the opportunities for, and limitations of, these indicators.
Contents

Abstract ............................................................................................................................... 2

Contents ............................................................................................................................... 3

Introduction ......................................................................................................................... 4

The Growth of Services Industries - A Review ................................................................. 5
  The emergence of a service economy ............................................................................. 5
  The growing importance of service industries ............................................................ 5
  A need for improved services sector data ...................................................................... 6
  The business cycle and service industries .................................................................. 7
  The heterogeneity of service industries ........................................................................ 8

Indicators of Service Industries - An Assessment ............................................................ 9
  Limitations of employment as an indicator .................................................................. 9
  The goods and services tax data .................................................................................. 10
  The accommodation services industry ....................................................................... 11
  Criteria for selecting service industries ..................................................................... 13
  Moving forward ............................................................................................................ 16

Summary ........................................................................................................................... 17

References ......................................................................................................................... 18

Endnotes ............................................................................................................................ 20
Introduction

This paper reports on the potential development of sub-annual indicators for service industries using Goods and Services Tax (GST) data. The services sector is now of central importance to the Canadian economy; however, our knowledge of this sector remains incomplete, partly due to a lack of data. Services sector firms are, on average, smaller and more variable than their goods-producing counterparts, making data collection more challenging. Statistics Canada is starting to use more administrative data in its business programs with the aims of reducing survey response burden and improving the timeliness and usefulness of statistics. With technical advances in computing and more standard corporate tax reporting, the statistical agency is now better able to take advantage of tax data.

In developing sub-annual indicators of service industries, we raise two questions regarding the national statistical program. Is there a need for service output indicators to supplement existing sub-annual sources such as employment in our aggregate measures? And if so, what service industries are the most promising for development? In the first part of the paper we review the growing economic importance of service industries and their performance during economic downturns. In the second part, we examine sub-annual GST output indicators for selective service industries using a case study of accommodation services. As these indicators will improve the timeliness and relevance of the statistical program, we conclude by discussing the opportunities and limitations of using GST data.
The Growth of Services Industries - A Review

The emergence of a service economy

In 1965, Victor Fuchs – Associate Director of Research with the National Bureau of Economic Research (NBER) – examined the growing importance of services industries and the implications for the American economy (Fuchs, 1965). He observed that virtually all the net growth in employment during the post-war period occurred in the services sector. The United States became the world’s first “service economy” in the late 1950s when more than half of the employed population was no longer involved in the production of tangible goods. Despite the continued growth of service activity, researchers largely neglected its significance for a surprisingly long time (Coombs & Miles, 1999). Indeed, some forty years later, we continue to grapple with some of the issues first raised by Fuchs. No doubt that part of the difficulty in coming to terms with a service economy has been the challenge of definition and measurement (Copeland, 2003; Metcalfe & Miles, 1999; Maclean, 1997; Moulton, 2004; and Wernerheim & Sharpe, 1999). And much of the theory and methods we use to view the economic world, for both measurement and analysis, continues to reflect approaches established when goods-production was paramount.

The growing importance of service industries

The growing contribution of the services sector to the Canadian economy has been well chronicled and its importance argued over and over (Ducharme, 2004). To recap, in 1961 service-producing industries accounted for just over one half of Canada’s employment (54%) and gross domestic product (GDP, 55%). By the turn of the century, those industries classified to the services sector accounted for about three-quarters of employment (74%) and almost 70% of GDP (Lebreux, 2002). This enormous growth in services is attributed to several factors.

The increasing labour force participation of women is both one of the causes and effects of service growth. Service occupations opened up more opportunities for women, and by entering the labour force in greater numbers, women helped to spawn more service activity via substitution from the household sector to market activities (e.g. child care). Another factor is the higher income elasticity of demand for many services compared to goods. The demand for services (e.g. leisure travel) tends to increase with higher levels of consumer income as experienced during the post-war period.

The growth of the services sector also results from outsourcing to meet the growth of intermediate demand for services by goods-producing industries (Maclean, 1997; Statistics Canada, 2004). In fact, part of the growth in services is a statistical illusion, reflecting the unbundling of economic activity previously contained within goods-producing industries (Wernerheim & Sharpe, 1999). More recently, outsourcing is occurring on a global scale with a shift of goods-producing industries to low-wage economies as knowledge-based economies specialize in services (e.g. biotechnology). An increasingly educated labour force makes such specialization possible. Clearly, today’s service economy reflects a constellation of factors, including advanced technology, and the interactions among them (Gershuny & Miles, 1983).
Our purpose is not to provide an exhaustive explanation but rather to examine the need for a comprehensive and consistent set of measures for service industries. Although progress has been made with annual statistical coverage of many service industries, Ducharme (2004) asserts that growing international trade, the role of trans-national enterprises, and the rapid transmission of political-economic shocks (e.g. currency) make the need for more timely and internationally comparable services data even more critical. Finally, while the growth of a services economy is more than a simple shift in the relative sizes of various industrial sectors, statistical agencies employ a standard industrial classification framework to measure economic activity. It is within this framework that we investigate the need for new sub-annual measures of service industries.

A need for improved services sector data

Despite its dominance in developed economies, the services sector has been less analyzed than the goods-producing sector due to data and measurement issues. Indeed, the Voorburg Group on Service Statistics has been meeting for almost twenty years in an attempt to improve the availability of services sector data. Fuchs (1965) first warned that aggregate measures of economic output, such as GDP, would become increasingly less useful for studies of productivity and economic growth without better measures of services output. According to Greenspan (2001), output per hour was a meaningful statistic in an economy dominated by goods for which a typical unit of output was reasonably unambiguous. In a knowledge-based economy, output begins to reflect ideas, more so than material or labour, imposing challenges for statistical systems.

After implementing the 1993 System of National Accounts (SNA), many statistical agencies have turned their attention to better measures for output of services (Moulton, 2004). At the 2004 Voorburg meetings in Ottawa, the United States Census Bureau (USCB) reported on the Quarterly Services Survey (QSS), its first new economic indicator in nearly 40 years and the centerpiece of an initiative to address deficiencies in American federal statistics. Like Statistics Canada, the USCB produces a number of indicators including: monthly series of retail and wholesale; manufacturer’s shipments, inventories and orders; residential construction; merchandise trade figures; and quarterly corporate profits. The QSS will be used by the Bureau of Economic Analysis (BEA) to improve sub-annual GDP by industry accounts as well as estimates of personal consumption expenditures. The QSS will also provide the Federal Reserve Board with timely information to assess current economic performance.

Similarly, new services measures are needed to inform Canadian public policy. For productivity, Maclean (1997) feels that measurement problems affect those service industries recording the lowest productivity growth. These include defining services sector outputs, identifying price versus quality changes, and the general paucity of services data, due in part to poorer survey coverage. Inappropriate deflaters lead to problems measuring quality change and contribute to the underestimation of real output growth. For regional development, policymakers are now viewing the so-called footloose producer services as the new “growth poles” or engines of growth and employment creation. Copeland (2003) suggests that the single most important impediment to high-quality policy research on services is the lack of good data.

Improved statistical coverage of service industries - prices and output - is essential for public policy and progress is being made on both fronts. For prices, a multi-year plan identifies over
80 service commodity categories for new price and volume measures to construct a Services Product Price Index (SPPI) for business services (Statistics Canada, 2004). For output, implementation of the 1997 North American Industry Classification System (NAICS), along with an infusion of resources, led to new annual surveys of service industries (e.g. survey & mapping; repair and maintenance services).\textsuperscript{iii} Despite this effort however, coverage gaps remain for many service industries. And at the sub-annual level, indicators of service industries would help assess current economic conditions.

The business cycle and service industries

Our interest in business cycles is not with their identification \textit{per se}, but rather with the potential contribution of sub-annual service indicators in understanding economic conditions. In a review of Canadian business cycle history, Cross (1996) identifies several useful measures of business cycles.\textsuperscript{iv} The \textit{duration} is the length of time from one peak to the next or from one trough to the next while the \textit{amplitude} measures the vertical difference between the peak and trough. A \textit{turning point} occurs when a swing in one direction (e.g. expansion) ends and a swing in the other direction (e.g. contraction) begins.\textsuperscript{v} Cross (1996) notes that a turning point is the culmination of a process set in motion long before this change occurs and not an event in and of itself.

The empirical realities of business cycles rarely, if ever, conform to a simple pattern (Chin, Geweke, & Miller, 2000; Cross, 1996; Romer, 1999). Chin \textit{et. al.} (2000) found that U.S. business cycles have tended to exhibit asymmetric patterns of contraction and recovery with non-stationary values at turning points. Romer (1999) reported that volatility has declined slightly (lower amplitude) and expansions have become noticeably longer (increasing duration) with policy-induced recessions preventing more severe economic downturns. She concludes that macroeconomic policy (e.g. countercyclical monetary policy and automatic stabilizers) is partly responsible as are other factors. Cross and Salvatore (2003) for example, argue that the reduction of inventories relative to sales over the last two decades, due to integrated supply chain management among other factors, has helped to temper fluctuations in GDP.

The relative growth of service industries has also helped to reduce the amplitude. The larger cyclical swings that characterize goods-production, reflecting accumulating inventories, do not occur with services since, by their very nature, they cannot be stored. Hiris (2001) found output in services less sensitive to cyclical fluctuations in total demand and services employment less sensitive than fluctuations in output. He asserts that business cycles for some of the faster-growing industries consist of cyclical accelerations and decelerations (i.e. ‘growth rate cycles’).

In Canada, Little (1998) also found that output and employment declined less for the services sector than for the goods sector during the 1981-82 and 1990-92 recessions. Maclean (1997) attributed sharp declines in services sector productivity during these downturns to greater employment stability; service firms have more flexibility to moderate their labour costs. Based on the role of the services sector in the evolving pattern of business cycles, we reach two general conclusions. First, service industries behave differently than do goods-producing industries during economic downturns. Second, since services sector employment is more stable than output, sub-annual output indicators would be better able to reflect cyclicality than would employment for service industries.
The heterogeneity of service industries

As Cross (1996) notes, a business cycle is an aggregation and simplification that encapsulates different economic performances experienced among different industries. In general, the amplitude for production and employment is greater in commodity-producing industries than in distributive industries. In turn, the amplitude is greater in distributive industries than for other service industries. Indeed, Hiris (2001) suggests that some of the faster-growing service industries have never experienced a cyclical contraction in economic activity. In the Canadian context, Lebreux (2002) examined the sensitivity of individual service industries to recessions and reports significant within-sector variation.

As expected, he found that distributive and consumer industries were more sensitive to recession than were high-growth and government services. The former depend more on the economic health of the goods-producing sector while the latter industries reflect both structural trends and non-priced activity respectively. Of eleven service areas, Lebreux (2002) identified the accommodation and food services industry as the most vulnerable during recession. This finding confirmed an earlier study that reported this industry as highly cyclical and a potential leading indicator (Bloskie, 1991). Our case study features the accommodation services component of this industry.
Indicators of Service Industries - An Assessment

Limitations of employment as an indicator

Statistics Canada continues to rely on employment to measure the services sector, particularly at the sub-annual level. Estimates of monthly GDP for industries representing more than one third (37%) of the economy use employment either exclusively or partly as an indicator for lack of better data (Table 1). Excluding distributive services (NAICS 41, 44-45 and 48-49) and non-commercial real estate, finance and insurance services (from NAICS 52-53), employment is a principal indicator for the services sector.

Table 1: Indicator used to estimate Statistics Canada’s Monthly GDP by Sector

<table>
<thead>
<tr>
<th>NAICS</th>
<th>Sector description</th>
<th>% GDP</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Agriculture, Forestry, Fishing &amp; Hunting</td>
<td>2%</td>
<td>gross output</td>
</tr>
<tr>
<td>21</td>
<td>Mining and Oil &amp; Gas Extraction</td>
<td>6%</td>
<td>gross output</td>
</tr>
<tr>
<td>22</td>
<td>Utilities</td>
<td>3%</td>
<td>gross output</td>
</tr>
<tr>
<td>23</td>
<td>Construction</td>
<td>5%</td>
<td>gross output</td>
</tr>
<tr>
<td>31-33</td>
<td>Manufacturing</td>
<td>19%</td>
<td>gross output</td>
</tr>
<tr>
<td>41</td>
<td>Wholesale Trade</td>
<td>5%</td>
<td>gross output</td>
</tr>
<tr>
<td>44-45</td>
<td>Retail Trade</td>
<td>5%</td>
<td>gross output</td>
</tr>
<tr>
<td>48-49</td>
<td>Transportation &amp; Warehousing</td>
<td>5%</td>
<td>combination</td>
</tr>
<tr>
<td>51</td>
<td>Information &amp; Cultural Industries</td>
<td>3%</td>
<td>combination</td>
</tr>
<tr>
<td>52-53p</td>
<td>Finance &amp; Insurance (non-commercial real estate)</td>
<td>14%</td>
<td>gross output</td>
</tr>
<tr>
<td>53p</td>
<td>Real Estate (commercial) and Rental &amp; Leasing</td>
<td>5%</td>
<td>combination</td>
</tr>
<tr>
<td>54</td>
<td>Professional, Scientific &amp; Technical Services</td>
<td>4%</td>
<td>employment</td>
</tr>
<tr>
<td>55</td>
<td>Management of Companies and Enterprises</td>
<td>0%</td>
<td>n/a</td>
</tr>
<tr>
<td>56</td>
<td>Admin. &amp; Support, Waste Man. &amp; Remediation</td>
<td>2%</td>
<td>employment</td>
</tr>
<tr>
<td>61</td>
<td>Educational Services</td>
<td>5%</td>
<td>employment</td>
</tr>
<tr>
<td>62</td>
<td>Health Care &amp; Social Assistance</td>
<td>6%</td>
<td>employment</td>
</tr>
<tr>
<td>71</td>
<td>Arts, Entertainment &amp; Recreation</td>
<td>1%</td>
<td>employment</td>
</tr>
<tr>
<td>72</td>
<td>Accommodation &amp; Food Services</td>
<td>2%</td>
<td>gross output</td>
</tr>
<tr>
<td>81</td>
<td>Other Services</td>
<td>2%</td>
<td>employment</td>
</tr>
<tr>
<td>91</td>
<td>Public Administration</td>
<td>6%</td>
<td>employment</td>
</tr>
</tbody>
</table>

p denotes partial

Even where gross output is used, timeliness would be improved if sub-annual output data were available. Another potential contribution for sub-annual service indicators is leading indicators of the economy. In the United States, Hiris (2001) feels that the services sector remains decidedly under-represented in available leading economic indices. In Canada, the Composite Leading Indicator (CLI) is produced monthly by Statistics Canada (Table 2). It is comprised of ten components which lead cyclical activity in the economy and together represent all major categories of GDP. Again with the exception of retail trade, employment is used as the indicator for the services sector.
Table 2: Leading indicators, Statistics Canada

<table>
<thead>
<tr>
<th>Composite leading indicator components</th>
<th>1992=100</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Housing index (1992=100)</td>
<td></td>
</tr>
<tr>
<td>2 Business and personal services employment '000s actual</td>
<td></td>
</tr>
<tr>
<td>3 S&amp;P/TSX stock price index 1975=1,000</td>
<td></td>
</tr>
<tr>
<td>4 Money supply, M1 $ millions, 1992</td>
<td></td>
</tr>
<tr>
<td>5 US composite leading indicator 1992=100</td>
<td></td>
</tr>
<tr>
<td>6 Manufacturing, average workweek hours</td>
<td></td>
</tr>
<tr>
<td>7 Manufacturing, new orders, durables $ millions, 1992</td>
<td></td>
</tr>
<tr>
<td>8 Manufacturing, shipments/inventories of finished goods ratio</td>
<td></td>
</tr>
<tr>
<td>9 Retail, furniture and appliance sales $ millions, 1992</td>
<td></td>
</tr>
<tr>
<td>10 Retail, other durable goods sales $ millions, 1992</td>
<td></td>
</tr>
</tbody>
</table>

There are three limitations in relying on employment exclusively as a sub-annual services indicator. First, with the services sector representing such a large bundle of unrelated activities, using aggregated employment may allow the structural growth of some service areas to mask the cyclical decline of others. Second, using annual data Maclean (1997) found that the services sector experienced substantial falls in productivity during the recessionary periods of the early 1980s and 1990s. She attributes these declines to greater stability of employment levels in services relative to goods; wages, hours worked and output in services show greater cyclical variation.

A third limitation of employment as an indicator of service industries stems from services sector businesses being, on average, smaller than their goods-producing counterparts. One explanation is a higher proportion of self-employment in the services sector.ix In 2004, almost six of ten (58%) of establishments accounting for 13% of revenue in a broadly-based services domain (NAICS sectors 51, 53, 54, 56, 71, 72 & 81) were non-employer. In certain sectors such as Professional, scientific and technical services, the proportion of non-employer is even higher (64% of establishments). Thus, a significant portion of the services sector is not even captured by employer-based survey instruments, the main data source for services employment.

The goods and services tax data

In 1991, a federal tax on manufacturing was replaced with a multi-stage sales tax levied on the consumption of goods and services in Canada. The Goods and Services Tax (GST) was set at 7% and is collected by the Canada Revenue Agency (CRA, formerly Revenue Canada).x Businesses that pay the tax, and also collect the tax on sales, remit the difference to CRA. In 2004, CRA collected almost $35 billion in GST from 2.2 million Canadian businesses via approximately 7.6 million transactions. Based on these transactions, Statistics Canada produces a clean and centralized database of the amounts of tax remitted and annual sales revenue per business by province and industry.

For a number of years, Statistics Canada has been considering GST data as a potential source of relatively inexpensive administrative data for business statistics. Initial emphasis was on the need to reduce response burden by replacing survey data with tax data, particularly for smaller businesses. Since May 2004 for example, the Monthly Restaurants, Caterers and
Taverns Survey (MRCTS) has used GST data for smaller businesses to reduce response burden and collection costs. Another initial use for GST data was to improve statistical processes such as imputation for missing survey data.

With improvements to internal procedures and routines for data processing (e.g., outlier detection) and calendarization (i.e., monthly apportionment of annual and quarterly remittances), the reliability and quality of the GST data is now sufficient for output enhancement. These data can be used to fill coverage gaps in business survey programs without necessitating additional survey activity. In particular, the GST data are now viewed as a reliable source upon which to base a stable and coherent set of current economic indicators for the services sector.

There are some considerations in using these GST data. First, the database represents a census of all business units operating in Canada that provide taxable goods or services and are required by law to collect GST or claim an input tax credit. The tax itself is collected from the legal entity (or enterprise) which is not always the same as the production unit (or establishment). Second, not all goods and services are subject to the GST; some are zero-rated and others are exempt.

Third, the GST is remitted on a monthly, quarterly or annual basis according to the annual revenue of the business (Table 3). While more than one quarter (27.8%) of businesses remit annually, they account for less than 3% of revenue. Statistics Canada has an accord with CRA to deliver the GST data seven weeks after the reference month; a good balance between timeliness and completeness. The extent to which these considerations matter varies within and between industries.

### Table 3: Distributions of GST Remittance by Business Revenue Size

<table>
<thead>
<tr>
<th>Gross Business Income</th>
<th>Remittance</th>
<th>Businesses</th>
<th>Transactions</th>
<th>Sales Revenue</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; $6 million</td>
<td>Monthly</td>
<td>6.4%</td>
<td>19.5%</td>
<td>77.1%</td>
</tr>
<tr>
<td>$500,000 to $6 million</td>
<td>Quarterly</td>
<td>65.8%</td>
<td>71.4%</td>
<td>20.2%</td>
</tr>
<tr>
<td>$30,000 to $499,999</td>
<td>Annual</td>
<td>27.8%</td>
<td>9.1%</td>
<td>2.8%</td>
</tr>
<tr>
<td>&lt; $30,000</td>
<td>Not required</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

The accommodation services industry

The Accommodation services industry (NAICS 721) is viewed as a leading indicator since business and consumer travel is discretionary. The business travel market is highly sensitive to economic conditions as businesses seek ways to reduce costs during economic downturns. Leisure travel, while perhaps less sensitive, is also discretionary in nature and may decline during economic slowdowns. Further, accommodations services activity reflects the broader tourism sector with spin-off effects on the rest of the economy (Bloskie, 1991; Lebreux, 2002; Ducharme, 2004). An annual survey collects information from this industry and $12.3 billion in total operating revenue was reported for 2003. Of the three industries comprising NAICS 721, Traveller accommodations (NAICS 7211) - hotels and motor hotels, motels, resorts, casino hotels, bed and breakfasts, and other accommodation - accounts for over 90% of this revenue.
The GST-based indicator potential of this industry was assessed by first confronting data from other sources. If annual movements correspond well, we have more confidence in sub-annual GST movements. The annual operating revenue from the survey was compared to the T2 (CRA corporate income tax returns) and GST revenue estimates (Figure 1). For 2000 to 2003, the GST revenue level is consistently higher than that estimated by survey and by the T2 amount. If the comparison is made for those records common in the T2 and GST source (i.e. the same businesses), the annual revenue estimates were almost identical.

Differences among these sources are expected. For example, the T2 is used as one source for the Business Register (BR) at Statistics Canada. In turn, the BR is used as the sampling frame for business surveys. There is a lag between a new businesses remitting GST and filing its annual income tax. And as mentioned from the outset, the GST data are legal based businesses while the survey data are establishment-based. While there are consistent differences among the three sources in the level of revenue, the annual movements are virtually identical.

As such, the Accommodation services industry has potential as a GST-based sub-annual indicator by providing two key improvements (Figure 2). First, timeliness is enhanced since annual GST revenue for a given year is available almost one year prior to survey estimates. Second, relevancy is enhanced by the ability to clearly identify sub-annual movements. For example, the downturn caused by the outbreak of Severe Acute Respiratory Sickness (SARS) in the second and third quarters of 2003 is evident. It is apparent that improved timeliness with an ability to accurately portray sub-annual movements can help to better assess economic conditions.
Criteria for selecting service industries

A Steering Committee oversees protocols and procedures around the development of GST-based output at Statistics Canada and, for service industries, it is proposing quarterly revenue movements benchmarked to the annual survey revenue levels. An initial task was to determine what service industries to select as possible sub-annual indicators. There are four main sets of factors to consider in selecting service industries.

First, the System of National Accounts (SNA) identified the need for sub-annual data on Accommodation services (NAICS 721). This industry was considered a priority and, as work is well underway, it serves as our case study. Second, Statistics Canada’s Advisory Committee on Services Statistics recommended that selection be guided by criteria including the revenue size, cyclicality, and existing sub-annual coverage of the industry. A third consideration is international comparability; the American QSS presently covers three industry groups and part of another (NAICS 51, 54, 56 and part of 62).

A final set of factors are technical, including GST conduciveness and industry structure. For example, the GST does not apply equally to all goods and services. Also, average business size by industry is important since a larger proportion of annual GST remittance weakens the sub-annual quality. Industry composition (simple versus complex or multi-industry businesses) is a related consideration as the GST is collected from the business enterprises (i.e. legal entity), not the establishment (i.e. production units).

The selection of service industries to develop indicators must balance these four considerations. From NAICS sectors 51 to 81, we present eight of twenty-five industry groups for illustration (Table 4). For our assessment, the GST data are calendarized, raw (not seasonally adjusted) and unallocated (i.e. at the legal or enterprise level rather than allocated to the production or establishment level).
Table 4: Selected service industries and sub-annual selection criteria

<table>
<thead>
<tr>
<th>NAICS Industry Group</th>
<th>Revenue Size¹ ($ billions)</th>
<th>Cyclicality Measure²</th>
<th>Industry Complexity³</th>
<th>GST Conducive⁴</th>
<th>QSS Survey ⁵</th>
</tr>
</thead>
<tbody>
<tr>
<td>51-81 Services Domain</td>
<td>968.2</td>
<td>.82</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>531 Real Estate Services</td>
<td>52.2</td>
<td>.93</td>
<td>Medium</td>
<td>Fair</td>
<td>No</td>
</tr>
<tr>
<td>532 Rental &amp; Leasing Services</td>
<td>13.6</td>
<td>.82</td>
<td>High</td>
<td>Fair</td>
<td>No</td>
</tr>
<tr>
<td>541 Pro., Scientific &amp; Technical Services</td>
<td>103.3</td>
<td>.90</td>
<td>Medium</td>
<td>Good</td>
<td>Yes</td>
</tr>
<tr>
<td>561 Administration &amp; Support Services</td>
<td>52.3</td>
<td>.78</td>
<td>Low</td>
<td>Good</td>
<td>Yes</td>
</tr>
<tr>
<td>562 Waste Management &amp; Remediation Services</td>
<td>4.1</td>
<td>.85</td>
<td>High</td>
<td>Good</td>
<td>Yes</td>
</tr>
<tr>
<td>711 Performing Arts, Spectator Sports</td>
<td>7.0</td>
<td>.51</td>
<td>Low</td>
<td>Fair</td>
<td>No</td>
</tr>
<tr>
<td>811 Repair &amp; Maintenance Services</td>
<td>19.6</td>
<td>.89</td>
<td>Low</td>
<td>Good</td>
<td>No</td>
</tr>
<tr>
<td>813 Religious, Grant-making, Civic …</td>
<td>26.9</td>
<td>.51</td>
<td>Low</td>
<td>Poor</td>
<td>No</td>
</tr>
</tbody>
</table>

¹ Annual revenue ($ billions), 2004 Business Register Survey Universe File  
² Correlation coefficient of GST, with GDP t+1  
³ If complex establishments and revenue > 25% then high, < 25% then low, else medium  
⁴ Qualitative assessment of GST coverage and frequency of remittance  
⁵ Existing or planned coverage in USCB Quarterly Services Survey

From Table 4, it is apparent that some industries are better candidates than others for development as GST-based sub-annual indicators. Although the Real Estate services industry group (NAICS 531) represents a relatively large gap in sub-annual coverage and is highly correlated with future GDP, it includes residential rental activity that is GST exempt; there is also a fairly high portion of the GST remitted annually (> 10%), which somewhat weakens the sub-annual potential. However, within NAICS 531 the Real estate agents and brokers industry (NAICS 5312) appears to be a good candidate as a sub-annual indicator. The Rental and Leasing industry group (NAICS 532) is not as large or as highly correlated with future GDP. Moreover, it is a somewhat complex industry.

The Professional, scientific & technical services industry group (NAICS 541) is a good candidate as it is large and strongly correlated with future GDP (Figure 3). The GST applies evenly to activities within this group and less than 10% of GST is remitted annually. And the service industries in NAICS 541 are also surveyed by the USCB quarterly. This sector (NAICS 541) represents a diverse mix of activities ranging from legal and accounting services to computer design, management consulting and advertising services. However, the Computer system design and related service industry NAICS 5415) is dominated by complex businesses.
Figure 3: Quarterly Movements of Professional, Scientific & Technical Services Sub-sector
GST revenue, SEPH employment and GDP (first quarter 1998 = 100)

NAICS Sector 56 is also a good candidate for GST development (Figure 4). The Administrative
and support services (NAICS 561) Sub-sector is relatively large with a moderate to strong
correlation with GDP. The GST applies evenly to all activities and most of the GST is remitted
on a sub-annual basis. It is also appealing intuitively as it represents an array of activities from
employment agencies to business support services, including telephone call centres. Like Sector
54, most Sector 56 industries produce intermediate outputs for other businesses. The case for
the Waste management and remediation services (NAICS 562) sub-sector is not as strong;
however, the USCB is covering NAICS 56 in its entirety with the QSS.

Figure 4: Quarterly Movements of Administrative & Support (NAICS 561), Waste
Management & Remediation Services (NAICS 562), and GDP (first quarter 1998 = 100)
As Repair and maintenance services (NAICS 811) appear to have potential, it is currently being examined in more detail. The final two industry groups listed in Table 4 may not be priorities. The Performing arts, spectator sports and related industry group (NAICS 711) is small and weakly related to GDP; and more than 10% of the GST is remitted on an annual basis. Although the Religious, grant-making, civic, and professional and similar organizations sub-sector (NAICS 813) is larger, it consists of a diverse array of not-for-profit activities, many GST exempt (e.g. religious and charitable activity). Further, there may be no national accounting or policy need to collect information about this industry sub-annually and other sources of tax data can be used on an annual basis.xx

Moving forward

Although work remains on-going, data exploration so far clearly suggests the potential for sub-annual, GST-based service indicators to improve the timeliness and usefulness of economic measures. The Accommodation services sub-annual data are scheduled to be released sometime during the first half of 2006. Other service industries will be selected after further consulting with clients and assessing the technical considerations as discussed. It is not always a straightforward matter to apply these considerations. For example, assessing the cyclicality of an industry with unadjusted data is confounded by seasonality. Since the GST is collected from the legal business or enterprise, we will also be investigating allocated data (i.e. GST apportioned to establishments or production units). The use of unallocated data may require surveying the larger, complex businesses to ensure an accurate assignment of revenues among industries. Finally, producing a series of sub-annual service indicators requires the establishment of a dissemination protocol including an annual benchmarking method and revision policies.
Summary

The growth of the services sector and the concomitant need for better measures for service industries (i.e., prices and output) is not in dispute. In developing potential sub-annual output indicators for service industries, two questions were raised. First, is there a need for such indicators to supplement existing measures such as employment? In reviewing the behaviour of service industries during economic downturns, it appears that output-based indicators would help sharpen our assessment of current economic conditions. Service industry employment is less sensitive than output to downturns in the economy. Moreover, there is a possible sectoral fallacy as aggregate measures mask within-sector variations. Finally, indicators using the GST data cover the self-employed and are able to provide more industrial detail than broader-based employment surveys.

Clearly, sub-annual indicators of service industries can complement existing data sources and improve our understanding of current economic conditions. The Accommodation services industry is promising since the annual GST movements shadow those of the survey while vastly improving the timeliness. Moreover, the sub-annual indicator is able to delineate economic events that are partly masked by annual data. The question remains what industries, and in what sequence, should be selected for sub-annual indicators? We have proposed a set of criteria to guide in this selection and work continues on assessing the sub-annual suitability of service industries. This initiative demonstrates Statistics Canada’s commitment to increasing understanding of the services sector by improving the timeliness and relevancy of its business statistics program.
References


Endnotes

1 Fuchs defined the service sector as comprising trade, finance, insurance and real estate; personal, professional, business and repair services; and public administration.

2 Business or producer services, such as telephone call centres, are the fastest growing segment of the rapidly expanding services sector (Sciadas, 1995a; Wernerheim and Sharpe, 2001).

3 The 1997 NAICS replaced the 1980 SIC with more emphasis on service industries and the Project to Improve Provincial Economic Statistics (PIPES) provided more detail collected by business surveys. Just one half (50%) of 265 industries in a broadly defined services domain (private provision in NAICS sectors 51 to 81) are covered on an annual basis by a data program.

4 Depicted graphically, a classic business cycle model consists of a vertical axis, measuring an aggregate such as output or employment, and of a horizontal axis, measuring a unit of time. The peak is the highest point in the expansion phase of the economy, followed by a downturn or a period of recession until the economy reaches the bottom or the trough, prior to expanding again.

5 In the U.S., the NBER assigns business cycle reference dates while, in Canada, no such official responsibility exists but the task is undertaken de facto at Statistics Canada (Cross, 1996).

6 Industries were divided into four groups: Distribution (wholesale, transportation & warehousing); Consumer Services (accommodation & food, retail, and other including personal services, recreation and entertainment); High-growth (business services, finance, insurance & real estate, and communications); and Public Services (health care; education; and public administration).

7 Even at the annual level, there remains an over-reliance of goods-production. For instance, the commodity classification used in the input-output tables (and in some GDP components) at Statistics Canada uses a basic framework, emphasizing goods, created over 40 years ago.

8 Sciadas (1995b) reports that business service self-employment grew by an average of over 9% per year from 1976 to 1994 and represented over 30% of the total by 1994.

9 Quebec collects the GST for the federal government and, since 1997, a 15% Harmonized Sales Tax (HST) exists in each of New Brunswick, Nova Scotia and Newfoundland & Labrador.

10 Statistics Canada enhanced and significantly expanded tax data as a source of business statistics in 1997 by creating a Tax Data Division to provide the statistical infrastructure.

11 The business unit refers to any type business: sole proprietorship, partnership, or corporation.

12 The GST is not applied to zero-rated goods, such as exports, basic groceries, prescriptions, fishery and farm products. However, businesses selling these goods claim an input tax credit (ITC) for the GST paid on the purchases and expenses made to provide them. There are also tax exempt goods including residential rents, daycare, nursery, medical services, financial services, legal aid, and charitable services; these businesses cannot claim the input tax credit.

13 Monthly and Quarterly reporters remit within 30 days and Annual reporters within 3 months; almost 90% of GST contributions are captured by the 7th week following the reference month.

14 In 2003, the NACIS 721 client base was 35% domestic consumer, 35% domestic business, 22% foreign (consumer and business) and about 8% domestic government (8%).

15 The remaining two industries are 7212 (Recreation Vehicle Parks and Recreational Camps) and 7213 (Rooming and Boarding Houses).

16 The BR is a sampling frame for Statistics Canada business surveys. It is a list of all Canadian businesses with a Business Number (BN), a 15 digit code assigned to all businesses for their transactions with the federal government (e.g. taxes, payroll deductions, custom tariffs).

17 Also identified as SNA priorities were Automotive rental and leasing (from NAICS 532) and Automotive repair and maintenance (from NAICS 811).

18 The data in Figures 1 to 4 are experimental for research purposes only and have not been released by Statistics Canada into the public domain. Data have been processed (edited & imputed) and calendarized but not seasonally adjusted and remain in current dollars.

19 Organizations registered as charities or non-profits with CRA are required to submit an annual Charity Information Returns (T3010) or Non-profit Information Return (T1044) respectively.