VOORBURG GROUP ON SERVICE STATISTICS

13th meeting

Rome, 21 - 24 September, 1998

MEASURING SERVICES ECONOMY IN SINGAPORE

Emphasis on Short-term Indicators

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Session 6: Short-term Indicators

Abstract

This paper presents an overview of how the Singapore Department of Statistics (DOS) measures the services economy in Singapore, with special emphasis on short-term indicators for assessing the growth and performance of the various services industries. Measuring services is inherently difficult. Meeting the growing demand for timely and accurate short-term statistical indicators of the performance of services industries is even more difficult, aggravated as it is by the constraints of limited resources and the avoidance of excessive respondent burden. These issues are discussed in this paper.

MEASURING SERVICES ECONOMY IN SINGAPORE
Emphasis on Short-term Indicators

I   INTRODUCTION

1   The services sector is a major engine of growth in the Singapore economy. Accounting for two-thirds of GDP, the sector comprises a diverse mix of economic activities, ranging from traditional services such as entreport, wholesale and retail trade in the commerce sector to emerging business-related services such as IT, communications and media, healthcare and logistics.

2   Unlike traditional services, the emerging services clusters are not only complex by nature, they also span across different industrial sectors, making measurement difficult. With their rapidly increasing contribution to the economy, the need for accurate and timely statistical indicators to assess their growth and performance is widely recognized. The compilation of such statistics poses tremendous challenges to official statisticians and raises interesting and problematic conceptual issues.

3   This paper presents an overview of how the Singapore Department of Statistics (DOS) measures the services economy in Singapore, with special emphasis on short-term indicators for assessing the growth and performance of the various services industries. Measuring services is inherently difficult. Meeting the growing demand for timely and accurate short-term statistical indicators of the performance of services industries is even more difficult, aggravated as it is by the constraints of limited resources and the avoidance of excessive respondent burden. These issues are discussed in this paper.

II   OVERVIEW OF SINGAPORE'S SERVICES ECONOMY

4   Comprising commerce, transport and communications, financial and business services as well as community, social and personal services, the services sector has increased its share of GDP from 63 per cent in 1988 to 67 per cent in 1997. Conversely, the manufacturing sector's share of GDP has declined from 29 per cent to 23 per cent. The share of the remaining sectors (agriculture, mining and quarrying, utilities and construction) has remained constant at around 10 per cent. During this period, GDP in current prices has grown from S$52 billion in 1988 to S$143 billion in 1997.

5   Traditional services industries are found mainly in commerce (entreport, wholesale and retail trade, hotels and restaurants), and transport and communications. While the commerce sector has maintained its share of GDP at about 17 or 18 per cent, the share of transport and communications has declined from 13 per cent in 1988 to 10 per cent in 1997 (Table 1).

**TABLE 1: PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC PRODUCT
AT CURRENT MARKET PRICES**

	1988	1997
Manufacturing	29	23
Construction	6	9
Commerce	17	18
Transport & Communications	13	10
Financial & Business Services	23	29
Financial Services	9	13
Business Services	14	16
Other Services	10	10

6   The sector with the largest proportion of non-traditional activities, namely the financial and business services sector, is also the sector with the largest increase in its share of GDP in the last decade (from 23 per cent in 1988 to 29 per cent in 1997). The financial services sub-sector has increased its contribution to GDP from 9 per cent in 1988 to 13 per cent in 1997 (Table 1). The growth of this sub-sector has previously been based on traditional banking and financial activities including offshore banking through Asian Currency Units (ACUs), stock broking, foreign exchange trading and insurance services. However, the importance of new and non-traditional activities such as fund management, derivative trading, bonds and security trading has increased rapidly in recent years. On-going reform of the financial services sub-sector coupled with the rapid pace of financial innovation will ensure the importance of financial services in Singapore's future economy.

7   Spurred by the emergence of new and emerging business services, particularly IT-related and media services, the business services sub-sector has also grown rapidly increasing its share of GDP from 14 per cent in 1988 to 16 per cent in 1997. Business services are expected to grow rapidly with the Singapore economy becoming increasingly knowledge-based and the active promotion of service clusters such as IT, communications and media, logistics, education and healthcare.

III   MEASURING SINGAPORE'S SERVICES ECONOMY

Comprehensive Annual Data

8   Comprehensive annual data are drawn from four major surveys conducted by DOS and the Monetary Authority of Singapore (MAS). DOS conducts the annual surveys on commerce, services and the international trade in services while MAS conducts the survey of financial institutions. These surveys collect comprehensive income and expenditure data, which are used as inputs in the estimation of national accounts. A comparison of the data items proposed in the model survey presented and discussed at Voorburg Group's meetings show that data items for most of the 11 modules of the model survey are available from our annual surveys. This is particularly the case for traditional services.

9   However, for new and emerging services, particularly the IT-related services, information on selected modules are not available from our annual surveys. Table 2, which presents the comparison for the IT sector, shows that our annual surveys do not currently

yield information on packaged software revenue. DOS will improve our annual surveys to ensure the collection of more comprehensive data pertaining to new industries such as the IT-related industries and logistics. For example, questions on electronic-commerce (e-commerce) have been included in the current round of surveys of commerce and services for the first time.

TABLE 2: COMPARISON OF EXISITING DATA WITH ITEMS PROPOSED IN THE MODEL SURVEY

Module	Topic	Availability
1	Revenues	Available, Annual Survey of Services
2	Goods and services used in operations	Available, Annual Survey of Services
3	Purchases of goods and services for resale	Available, Annual Survey of Services
4	Inventories	Available, Annual Survey of Services
5	Accounting procedures	Available (accrual basis)
6	Exports	Available, Trade in Services
7	Imports	Available, Trade in Services
8	Packaged software revenues	Not identified separately
9	Employment	Available, Annual Survey of Services
10	Fixed assets, additions and disposals	Available, Annual Survey of Services
11	Software research and development	Partially available, Annual Survey of Services

Inadequacy of Existing Industrial Classification

10   The inadequacy of existing industrial classifications to cater to new and emerging economic activities is well recognised. Indeed, classification-related issues are discussed at great length at Voorburg Group meetings. Economic activity in Singapore national accounts is currently classified on the basis of the Singapore Standard Industrial Classification 1990 (SSIC 90). Recognising the inadequacy of SSIC 90, DOS has recently issued a revised and updated classification, Singapore Standard Industrial Classification 1996 (SSIC 96, Table 3).

11   The SSIC 96, which was adapted from the United Nations Industrial Standard on Industrial Classification (ISIC) Rev 3, took into consideration changes in Singapore's industrial structure.   Placing greater emphasis on services, SSIC 96 comprises 17 sections, or nearly twice the 9 major divisions in SSIC 90 (Table 3). Sections pertaining to services have been expanded, with services previously classified within divisions and major groups upgraded to the section level. SSIC 96 will be implemented in Singapore's national accounts late this year.

12   However, with the rapid development and increasing complexity of new and emerging services, there is a growing recognition that the conventional framework of industrial classifications (as represented by ISIC) impedes attempts to statistically measure these new services, which span across several different industries. An example is the logistics sector whose activities include transportation, distribution, inventory control and communications.   These activities would be assigned to several different industrial classifications under a conventional classification.

TABLE 3: COMPARISON OF SSIC 1990 AND SSIC 1996

SSIC 1990		SSIC 1996	
Division		Section	
1	Agriculture, Fishing, Forestry & Hunting	A	Agriculture, Hunting and Forestry
		B	Fishing
2	Mining and Quarrying	C	Mining and Quarrying
3	Manufacturing	D	Manufacturing
4	Electricity, Gas and Water	E	Electricity, Gas and Water
5	Construction	F	Construction
6	Commerce	G	Wholesale and Retail Trade
		H	Hotels and Restaurants
7	Transport, Storage and Communications	I	Transport, Storage and Communications
8	Financial, Insurance, Real Estate and Business Services	J	Financial Intermediation
		K	Real Estate, Renting and Business Services
9	Community, Social and Personal Services	L	Public Administration and Defence
		M	Education
		N	Health and Social Work
		O	OtOther Community, Social and Pe Personal Services
		P	Domestic Work Activities
		Q	Extra-Territorial Organisations

13   An alternative framework is adopted by the recently introduced North American Industrial Classification System (NAICS), which groups industries according to differences in industry process, whereas ISIC groups industries according to differences in industry output.

14   Thus, while the implementation of SSIC 96 in Singapore's national accounts will enable the presentation of statistical indicators for more detailed services industries, DOS has begun to review, modify and expand SSIC 96. In undertaking this revision (expected to be completed in the year 2000), DOS will examine closely the NAICS with the view to assessing its appropriateness for Singapore.

IV   SHORT-TERM INDICATORS

15   The above shows that fairly comprehensive annual survey data are available to measure Singapore's services economy. These data would be supplemented by the inclusion of additional data items, particularly those suggested in the model survey that are not currently collected in our annual surveys. In addition, there is also a need to revise our industrial classification to ensure that new and emerging economic activities are adequately covered. Modification to our surveys and revisions to our industrial classification are required in order to develop a sound and reliable statistical framework for measuring services in Singapore.

16   However, while the foundations for such a framework have been firmly laid, there is the additional need for timely, accurate and reliable short-term economic indicators to assess economic performance. Timeliness and scarce resources dictate that the development of these indicators cannot be simply based on survey returns.

Administrative Data

17   In developing these indicators, DOS has relied as far as possible on administrative data which has the advantages of being available on a high frequency (usually monthly), more comprehensive (usually almost complete coverage) and less labour-intensive than surveys. A wide range of short-term indicators (both volume as well as deflated value indicators) is derived from administrative by-products arising from the operations of several government agencies (see Annex 1). Some examples[1] are:

> *a.*   *Trade data*
> Singapore is the first country in the world to introduce a nation-wide comprehensive electronic data interchange system (TRADENET) for trade documentation. TRADENET is highly interactive and processes trade declarations within 30 minutes, with some under 5 minutes. The

Indicators such as loans and advances of commercial banks, merchant banks and finance companies as well as assets and liabilities of Asian Currency Units (ACUs) are used to assess the performance of the financial sector sub-sector. These monthly/quarterly data are also available about 4 weeks after the end of the reference period.

18   DOS is also exploring the feasibility of developing additional indicators from the greater exploitation of data pertaining to the Goods and Services Tax (GST), which was introduced in 1994.

Survey Data

19   Since administrative data are often insufficient, they would have to be supplemented by survey data. Unlike the annual surveys, which are large-scale and comprehensive, these higher frequency (usually quarterly, but sometimes monthly) surveys collect minimal information from a relatively small number of establishments, which nevertheless account for a large share of total value added in the industry. Data from these surveys are used to derive key economic indicators for the relevant services industries. Some examples are:

a.   *Monthly Surveys of Retail Trade & Catering Trade*
These monthly surveys have been conducted since 1985. They collect basic data on turnover, which enable the compilation of the monthly retail sales and catering indices. These indices, available with a 4 weeks lag, are used to assess the performance of domestic trade and restaurants within the commerce sector.

b.   *Quarterly Surveys of Wholesale Trade*
This survey was introduced in 1996 to complement the above two surveys. The data collected are used to compile the quarterly wholesale trade index which, together with the retail sales index, enable a more complete assessment of domestic trade. The index is available with a 6 – 7 weeks lag.

c.   *Quarterly Business Expectations Surveys*
These quarterly surveys on services and commerce have been conducted since 1975. The surveys currently have a sample size of about 1,250 establishments covering transportation, storage, communications, business services, real estate and financial services.

The surveys collect, in addition to qualitative assessment of business expectations, quantitative data for a small number of key economic and financial variables. These include operating receipts, expenditure and employment. The qualitative data, which are released in the Quarterly and Annual Economic Surveys, are used to assess business sentiments. The quantitative data are used as crucial inputs for the compilation of quarterly national accounts estimates, and some components of the composite leading index. Results from these surveys are available with a one-month lag.

e. *Quarterly Surveys of Financial Institutions*
The Monetary Authority of Singapore's quarterly survey of financial institutions collects data on selected income and expenditure items, including the amount of fees and commissions received by banks, ACUs as well as stocks, shares and bond brokers. These data are used in conjunction with monthly data from the financial markets and the banking schedules to assess the performance of financial services. The information is available with a 4 weeks time lag.

f. *Survey of Quarterly National Income Estimates*
For statutory boards and larger private companies in sectors, which are not covered in other surveys, DOS conducts a quarterly survey of national income estimates to collect basic data on income and expenditure items. The results are also available with a 4 – 6 weeks lag.

V   ON-GOING AND FUTURE DEVELOPMENT

Measurement of Output

20   While the judicious use of administrative and survey data has enabled the compilation of a fairly comprehensive range of short-term indicators, particularly for traditional services, DOS recognizes the need for the development of additional data sources and indicators for the new, emerging and non-traditional services industries. Further, within traditional services whose output are largely provided at non-market prices, e.g. education services, medical and healthcare, as well as public administration, there is an increasing recognition for the development of new output-based indicators to replace the traditional input-based indicators. Table 4 shows selected industries, which pose the most measurement difficulties.

TABLE 4 : SELECTED SUB-SECTORS AND INDUSTRIES OF SERVICES

Financial Intermediation	Education
Real Estate, Renting & Business Activities	Community, Social & Personal Services
Software development & consultancy	Sewage & refuse disposal
Research & development	Trade Union
Legal services	Recreational & cultural activities
Accounting services	Library & museum
Advertising services	Sports & country clubs
Public Administration & Defence	Health & Social Services
Economic development & promotion services	Medical services
Defence	Social services for the handicapped
Judiciary	Child Care Services

21   Insofar as traditional services generally provided by the public sector, e.g. public administration, defence, education, medical and healthcare, the problems associated with the current international practice of valuing their output on the basis of the value of inputs used, or the costs of productions are widely recognised. However, the difficulties of developing appropriate output measures for these services are not easy to resolve.

22   With the rapid emergence of new, non-traditional services within business services, the development of additional short-term indicators for business services is both a priority and a challenge. Even for traditional services such as legal, accounting and advertising services, it is necessary for new and more appropriate indicators to be developed to replace some of the existing input-based indicators such as employment and provident fund contributions. Some indicators being considered are the volume and value of property transactions for legal (conveyancing) services, and advertising revenue for advertising services.

Better Data Coverage of New Industries

23   The existing coverage of the quarterly business expectations surveys (BES) is not sufficient to cater for new, emerging services industries, particularly those which are still relatively small. These include several of the IT and media-related services. However, considerations of timeliness and the need to minimise respondent burden suggest that it may not be appropriate to re-design and expand the BES. Instead, a new quarterly survey of business receipts will be launched. This survey will focus on the collection of basic information on business receipts and expenditure (i.e., it collects less information than the BES). Its coverage will not overlap with that of the BES, but will instead supplement the BES, particularly in new and emerging services.

24   Information from the BES and the quarterly surveys of national income estimates will be combined with those to be collected from the quarterly survey of business receipts to develop a new quarterly business receipts index (QBRI) to assess the performance of business services. While these services (excluding real estate and rental) currently account for only about 5 or 6 per cent of GDP, their importance is expected to increase very rapidly. With the additional data, we will also be developing the Index of Services Output, which is analogous to the Index of Industrial Production for the manufacturing sector. This index will enable better measurement of services output in volume terms and provides a better gauge of the services sector performance.

25   With the growing importance of electronic commerce (e-commerce), priority is given to ensuring adequate coverage of these information in our statistical system. For a start, some basic data items pertaining to e-commerce have already been included in our current annual survey of commerce and services for reference year 1997. These include the following:

a.   type of e-commerce activities (exchange procurement information or sales of product/services);

b.   type of payments accepted (credit cards, cheques, cash cards, etc); and

c.   type of e-commerce transactions (business-to-business or business-to-consumer) transactions.

26.   In recognition of the importance of a proper statistical framework on the measurement of e-commerce, DOS will organise an International Statistical Institute (ISI) Cutting Edge Conference on "The Measurement of Electronic Commerce" in December, 1999.   This conference seeks to provide a forum for academics, practitioners and statisticians to exchange ideas with the view of developing a common understanding of the definition and measurement of e-commerce, including how their impact on the economy can be assessed.

27   DOS will therefore study carefully the definitions of the information and communication technologies (ICT) industries agreed at the meeting of the OECD/ICCP Statistical Panel in June this year[2]. The development of statistical indicators for the ICT sector will provide a useful reference for the development of a statistical framework for the measurement of e-commerce. An Occasional Paper will be issued on this study.

Exploitation of IT and Reduction of Respondent Burden

28   A notable feature of Singapore's statistical system is the high degree of exploitation of IT for data collection and processing. The greater exploitation of IT is particularly crucial in view of our scarce manpower resources, and the need to minimise respondent burden. The most recent example is the launching of the collection of statistical returns through the Internet. The electronic transfer of returns (ETR) was launched in March 1998 for the BES.

29   ETR enables faster processing with less manpower resources with the data submitted by respondents directly updated into our database. Online validation checks are instituted into the system to ensure data accuracy. Authentication (through digital signature) ensures data integrity and confidentiality with only authorised respondents being permitted to submit returns directly to the database. DOS will extend ETR to other surveys.

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[2]   'Towards a definition of ICT Commodities' by Eurostat to be discussed in the 13th Voorburg Group meeting.

VI   CONCLUSION

30   The measurement of services is inherently difficult. The need for timeliness, the scarcity of resources and the necessity to reduce respondent burden has made the development of short-term indicators for services even more difficult. Notwithstanding these difficulties, DOS has developed a fairly comprehensive range of timely short-term indicators which are used both to assess the performance of services, and as direct inputs into the compilation of Singapore's national accounts estimates. These indicators are generally adequate for traditional services.

31   However, the emergence of new and non-traditional services industries and the rapid pace of financial innovation has resulted in the urgent need for further additional and more appropriate short-term indicators for financial and business services. In taking a strong initiative to develop indicators in these areas, DOS has adopted an approach that is characterized by the following:

     a.   close collaboration with the appropriate government agencies, e.g. MAS (for financial services) and the Economic Development Board, EDB (for business services);

     b.   integrated approach in the use of multiple data sources with maximal use of administrative data, as well as data from several independent but related surveys; and

     c.   greater exploitation of IT.

Singapore Department of Statistics

September 1998

SELECTED SHORT-TERM INDICATORS FOR SERVICES INDUSTRIES

Industry	Indicators	Frequency
Commerce		
Entrepot Trade	Re-export trade statistics	Monthly
	Foreign Wholesale Trade Index	Quarterly
Domestic Trade	Trade margins	Monthly
	Retail Sales Index	
	Domestic Wholesale Trade Index	Quarterly
Hotels	Room days occupied	Monthly
	Visitor arrivals	
	Average occupancy rates	
	Hotel revenue	
Restaurants	Food & beverage revenue	Monthly
	Catering Trade Index	
Transport & Communications		
Land Transport	Bus & MRT fare receipts	Monthly
	Number of taxis	
	Number of hired vehicles	
Water Transport	Container throughput	Monthly
	Sea cargo handled	
	Vessels arrival	
	Financial statements of shipping lines	Quarterly
Air Transport	Passenger-kilometres	Monthly
	Freight tonne-kilometres	
	Aircraft landing	
	Air cargo handled	
	Financial statements of airlines	Quarterly
Services Allied to Transport	Consignments handled (Courier Services)	Monthly
	Air passenger departures (Travel Agencies)	Quarterly
	Number of cruise passengers	
Communications	Direct exchange lines	Monthly
	International telephone calls in minutes	
	Internet services	
	Mobile phone and pager usage	
	Postal articles handled	
Financial Services		
Commercial banks	Loans & advances	Monthly
	Fees & commissions	Quarterly
Asian Currency Units	Assets & liabilities	Monthly
	Fees & commissions	Quarterly
Merchant Banks	Loans & advances	Monthly
	Fees & commissions	Quarterly
Finance Companies	Loans & advances	Monthly
	Fees & commissions	Quarterly

SELECTED SHORT-TERM INDICATORS FOR SERVICES INDUSTRIES
(continued)

Industry	Indicators	Frequency
Financial Services (continued)		
Stocks, shares & bond brokers	Value of shares transacted	Monthly
	Fees & commissions	Quarterly
FOREX Trading	Value of transactions	Monthly
Futures Trading	Volume of futures contract (Singapore International Monetary Exchange)	Monthly
Life Insurance	Premiums & claims	Quarterly
	Financial statements	
General Insurance	Premiums & claims	Quarterly
	Financial statements	
Business Services		
Real Estate	Developers' margins	Quarterly
	Occupied space of commercial & residential buildings	
	Financial statements from Housing Development Board & Jurong Town Corporation	Monthly
Legal Services	Property transactions (Conveyancing)	Monthly
	Number of provident fund contributors	
Advertising	Advertising Revenue	Monthly
	Number of provident fund contributors	
Engineering & Technical Services	} }	
IT Services	}	
Management Consultancy	}	
Business Representative Offices & Head/Regional Offices	} Number of provident fund contributors } Data on revenue & expenditure from } BES Survey	Monthly Quarterly
Accounting Services	}	