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**Quarterly Estimates of Output-Based GDP  
at Current Prices (or Nominal GDP)**

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# QUARTERLY ESTIMATES OF OUTPUT-BASED GDP AT CURRENT PRICES (OR NOMINAL GDP)

## I. INTRODUCTION

1. The Singapore Department of Statistics (DOS) compiles annual estimates of GDP at both constant and current prices (i.e. real and nominal GDP) using the output and expenditure approaches since the 1960s. With the compilation of nominal GDP using the income approach since the mid-1990s, annual estimates of nominal GDP are available for all three approaches to GDP.

2. Since the mid-1970s, DOS has also compiled quarterly estimates of real GDP using the output approach. Quarterly estimates of real GDP using the expenditure approach were compiled since the late 1980s. These estimates are crucial short-term timely indicators of our economic performance. In recent years, there is an increasing need for corresponding quarterly estimates of nominal GDP. This need is recognised explicitly in the IMF's Special Data Dissemination Standards (SDDS) which prescribe the dissemination of quarterly estimates of nominal GDP using any of the three approaches.

3. As the output approach is the main approach used to compile GDP in Singapore, DOS initiated in 1997 a project to develop and compile a consistent set of quarterly estimates of output-based nominal GDP. This paper describes briefly the framework and methodology used to compile these quarterly estimates. Historical data series from 1990 are provided in the statistical appendix. The complete set of historical data series from 1985 is available in TREND, DOS on-line time series database.

## II. CONCEPTS AND DEFINITIONS

4. The concept of economic production and the approaches to its measurement are of a relatively recent vintage. Although there were attempts as early as the mid-17th century to measure the wealth of a nation, the focus was on income received by persons. Little attention was paid to the interrelation between production and income.

5. By the middle of the 18th century, economists began to consider the production of goods as a measure of a nation's wealth. However, as land was

considered to be the sole source of wealth, their concept of economic production was very limited. Only agriculture was viewed as production.

6. In the late 18th century, a new opinion emerged with economists considering any process which added value to already existing goods as "productive". This expands the production boundary from agriculture to manufacturing and certain goods-related services, such as transportation and trade. The production boundary was further extended at the end of the 19th century to include services not related to the distribution of goods and services.

### *Three Approaches to GDP*

7. With the development of national income and expenditure accounting in the 1940s, the concept of production was further extended to aggregate demand, which was compiled from statistics on the money-exchange transactions of the market economy.

8. The economy was viewed as a circular flow of goods, services and money: labour 'flows' through businesses to produce goods and services. Money 'flows' from businesses to households in the form of wages, interest and profits, and finds its way back to businesses through expenditure on goods and services. The total value of goods and services produced in the economy (or gross domestic product) can therefore be measured either in terms of output, expenditure or income generated.

9. The *output approach* to GDP considers the goods and services produced by the various industries in an economy. The value-added of the goods and services produced by an industry is computed as its output less the value of the inputs used, i.e. intermediate consumption. Viewed from this perspective, GDP is simply the sum of the value-added of all industries.

10. In compiling Singapore's output-based GDP, DOS has followed closely the guidelines of the United Nations System of National Accounts (SNA) as well as the practices of statistically advanced economies. Also, in order that the changing economic structure can be reflected, it is necessary to update or re-compile output-based GDP estimates in accordance with new industrial classifications. In this regard, DOS has recently re-compiled Singapore's output-based GDP estimates in accordance with the 1996 Singapore Standard Industrial Classification (SSIC 1996). The re-compilation requires not only the re-classification of existing data and estimates, but also the identification and development of relevant output indicators for new, emerging industries.

11. The *expenditure* approach to GDP views GDP from the demand perspective. Final demand is considered to be the sum of the aggregate expenditure in each final demand component, i.e. private consumption expenditure (PCE), government consumption expenditure (GCE), gross fixed capital formation (GFCF), exports of goods and services and changes in stocks and inventories. Expenditure-based GDP is simply final demand less imports, i.e. GDP is the sum of PCE, GCE, GFCF, net exports of goods and services and changes in stocks and inventories.

12. The *income* approach regards GDP as the sum of the income received from the domestic production of goods and services. Income-based GDP at current factor cost is the sum of remuneration (or compensation of employees) and gross operating surplus (or profits of corporations). The value-added of each industry can be easily shown to be identically equal to the sum of remuneration and operating surplus.

13. DOS compiles quarterly and annual real GDP estimates using the output and expenditure approaches, and annual nominal GDP estimates using all three approaches. In theory, these three approaches to GDP should yield the same estimate. However, as they are compiled independently from different data sources, it is inevitable for differences to arise. DOS considers the output approach to be the main approach, and regards the difference between expenditure-based and income-based GDP from output-based GDP as statistical discrepancies. That these statistical discrepancies are generally small in relation to GDP serve to corroborate the different GDP estimates.

#### *Nominal and Real GDP Estimates*

14. Nominal GDP, as explained above, is the total value of the goods and services produced in an economy at current prices. As this value is affected not only by the level of economic activity but also by the change in prices, economists have long argued that estimates of GDP should be discounted for price changes. The discounting of price changes is arrived at in practice through the valuation of goods and services at the prices of a reference year, i.e. at constant base year prices. GDP estimates valued at the prices of a reference year are referred to as constant price GDP estimates. Changes in such estimates from year to year are usually referred to as real GDP growth rates.

15. Nominal and real GDP estimates are essential, complementary measures of GDP. The availability of both facilitates the decomposition of changes in the total value of goods and services produced in an economy into price and quantity effects. Real GDP estimates are, in reality, volume indices which measure the volume (or level) of economic activity. Nominal GDP divided by real GDP yields the implicit GDP price deflator, the broadest measure of price changes in an economy.

### III. COMPILATION OF QUARTERLY ESTIMATES OF GDP

16. The compilation of GDP estimates, whether nominal or real, requires comprehensive information on all economic activities. Annual GDP estimates are compiled from fairly detailed information obtained from a mixture of administrative data and comprehensive economy-wide annual surveys. Such detailed information facilitates the construction of industry accounts<sup>1</sup> used in the compilation of annual GDP estimates.<sup>2</sup>

17. The approach used to compile annual GDP estimates cannot be used to compile timely, quarterly GDP estimates. While most enterprises and establishments are able to provide detailed information on the basis of annual audited accounts, they are generally unable or unwilling to do so on a quarterly basis. The collection of similarly detailed information on a quarterly basis imposes substantial respondent burden. It is also not practical, as most statistical agencies do not have sufficient resources to process and analyse quickly the voluminous information collected.

18. Timely, quarterly GDP estimates are therefore compiled using a different approach that relies on the availability of timely but reliable, short-term economic indicators of the level of economic activity in each industry. Since direct indicators of value-added are generally unavailable, most national statistical offices, including those in the more statistically developed countries like Australia, Canada and the UK, would use proxy indicators of either inputs or outputs.

19. *Output* indicators are indicators of either the quantity or the value of the output of the various industries. *Input* indicators measure the quantity or the

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<sup>1</sup> An industry account is a double-entry account that records the output and intermediate consumption of an industry.

<sup>2</sup> For the most recent two years, annual GDP estimates are based on either forecasted values (on the basis of past trends) or, where available, timely proxy indicators. These estimates are preliminary estimates which are subsequently revised and updated when data from the annual surveys become available.

value of one or more of the inputs used by the various industries, e.g. material inputs, employment or wages. Direct output indicators of production or sales are preferable to input indicators, which are indirect measures. However, where output indicators are not available, input indicators would have to be used. But it is necessary to bear in mind that the use of input indicators could yield under-estimates of output when there are improvements in the production processes (leading to higher productivity) or increases in capacity utilisation.

20. The development and selection of appropriate indicators, whether output or input, requires extensive investigation and assessment. Besides being readily available on a timely basis, the indicators would have to be reliable, and show a stable relationship with value-added.

21. DOS first started developing proxy indicators in the mid-1970s to compile quarterly estimates of real output-based GDP. The initial set of a hundred plus indicators has since been updated, improved and expanded to close to a thousand indicators covering the various industries.

22. The indicators used can be broadly categorised into volume and value indicators. Volume indicators measure the quantity (or volume) of output produced, material inputs or employment. Value indicators measure the value of the output, material inputs or the wages of the workers employed.

23. Estimates of real and nominal GDP estimates make use of these indicators differently. In compiling estimates of real GDP, value indicators are deflated using an appropriate price index. This is, in effect, a revaluation of the indicators at the prices of the reference or base year (i.e. 1990 in the current series of constant price GDP estimates). Where volume indicators are available, real GDP estimates are derived through the extrapolation of the current price GDP estimates in the reference year using the changes in the volume indicators as the basis for extrapolation.

24. In compiling nominal GDP estimates, the indicators are used in the opposite manner. Value indicators are used as the basis for extrapolating nominal GDP estimates, while output as shown by volume indicators are re-valued or “inflated” to current market prices using a suitable price index.

25. The existing set of proxy indicators is developed mainly for the compilation of quarterly estimates of real GDP. Additional indicators would have to be developed to enable the timely compilation of quarterly estimates of nominal GDP. Value indicators, where available, could be used without

modification. However, where only volume indicators are available, it is necessary to do one of the following:

- a. develop a corresponding price index to “inflate” or re-value the volume indicators; or
- b. to develop alternative value indicators.

26. In most cases, DOS has chosen to develop additional value indicators through:

- a. more intensive use of administrative data;
- b. extension of the coverage of existing monthly and/or quarterly surveys; and
- c. the combination of data from separate, different data sources.

27. With the successful development of these additional indicators, DOS is now able to compile timely, quarterly estimates of nominal GDP to complement the presently available quarterly estimates of real GDP. As with quarterly estimates of real GDP, these quarterly estimates of nominal GDP are revised and benchmarked against more comprehensive and detailed annual data when these become available.

### *Data Sources*

28. DOS relies as far as possible on administrative data which has the advantage of being available on a high frequency (usually monthly), reliable and comprehensive (usually almost 100 per cent coverage), less labour-intensive and imposes minimal respondent burden.

29. However, administrative data by themselves are insufficient. They are supplemented with data from monthly or quarterly surveys conducted by DOS or the Research and Statistics Units (RSUs) of other government agencies. To ensure timeliness and reduce respondent burden, these surveys generally collect minimal information from a relatively small number of companies or establishments. Some of these surveys are:

- a. Monthly Surveys of Industrial Production
- b. Monthly Surveys of Retail Trade
- c. Monthly Surveys of Catering Trade
- d. Quarterly Surveys of Wholesale Trade
- e. Quarterly Business Expectations Surveys

- f. Quarterly Surveys of Financial Institutions
- g. Survey of Quarterly Business Receipts
- h. Survey of Quarterly National Income Estimates

30. The Survey of Quarterly National Income Estimates is a survey designed specifically to collect the necessary data for the compilation of the national accounts, in particular estimates of GDP. The scope of the survey is not restricted to any specific economic sector; its coverage extends across several economic sectors. More specifically, it collects data for industries where there are no other data sources. The expansion of the scope and coverage of this survey contributed substantially to the development of new indicators for the compilation of quarterly estimates of nominal GDP.

31. Before providing an overview of the data sources by the major economic sectors, it is worth reiterating that proxy indicators should have an observable, stable relationship with the value-added of the production in the various industries. The stability of this relation will, in general, be greater the more homogeneous is the industry. This means that estimates of value-added should be carried out at as fine an industrial breakdown as possible.

#### Manufacturing

32. Both output-value and input-value indicators are used in the manufacturing sector. These indicators are based on data from EDB's Monthly Survey of Industrial Production. This monthly survey covers more than 160 manufacturing industries, constituting more than 85 per cent of the total value-added of the manufacturing sector. Close to 400 hundred indicators are derived monthly from the survey results.

#### Construction

33. Data on the monthly progress certified payments collected by the Building and Construction Authority (BCA) constitute the main data source for the construction sector. Additional estimates are required for minor renovation, maintenance and repair works. The indicators used for the derivation of these additional estimates include average renovation costs, occupied space of offices and shops, the existing stock of residential houses and flats, and the number of new flats and houses sold.

#### Other Goods Industries

34. Indicators on agriculture include data on output of agricultural crops, fish, cattle, hens, ducks, chicks and eggs valued at ex-farm prices, obtained from the Primary Production Department. Output of cut flowers and live plants



are estimated from their domestic export values. For quarrying, the volume of granite produced is inflated by an index of granite prices. The performance of utilities is estimated on the basis of output and sales indicators obtained from the utility companies and the Public Utilities Board.

### Wholesale and Retail Trade

35. In view of the importance of entrepot trade to Singapore's economy, DOS provides a breakdown based on entrepot trade and domestic trade, which is the equivalence of wholesale and retail trade. Singapore's external trade data from the Trade Development Board (TDB) constitute the main data source. Value-added estimates on both entrepot and domestic trade are derived from the gross 'markup' margin on the value of re-exports, retained imports and local production less the costs of transport and other intermediate expenses. DOS's wholesale trade index and retail sales index provide complementary indicators which are used to corroborate the quarterly GDP estimates.

### Hotels and Restaurants

36. Estimates for this sector are based on several indicators, including room revenue from hotels, and food and beverage revenue from hotels and restaurants. DOS's catering trade index is used to estimate the output of other eating outlets. The estimated earnings of food-stalls and itinerant vendors are used as the basis for determining their output.

### Transport and Communications

37. Indicators available for this sector include bus fare receipts, number of registered taxis, tonnage of cargo handled by Singapore registered ships, number of passenger boats licensed, and revenue from data network and internet access services. Additional output data are provided by the major transport companies, the Port of Singapore Authority and the telecommunications companies in their responses to the Survey of Quarterly National Income Estimates.

### Financial Services

38. Output indicators are available from the Quarterly Survey of Financial Institutions conducted by MAS. The Quarterly Survey of Financial Institutions is a fairly comprehensive survey whose coverage includes commercial banks, merchant banks, Asian Currency Units, finance companies, stock brokers, investment advisors, money brokers and insurance companies. Administrative data on loans and advances, and assets and liabilities of selected financial institutions are also used as supplementary indicators.

### Business Services

39. Administrative data for this sector is relatively limited. Other than data on property transactions and employment data from the Central Provident Fund (CPF), most of the indicators for this sector are derived from the recently launched Quarterly Survey of Business Receipts and the expansion of the Survey of Quarterly National Income Estimates. Indicators derived from these surveys include rental income, advertising expenditure and the sales receipts of firms engaged in IT, engineering and management consultancy.

### Other Services Industries

40. Indicators on the output of government are based on government finance statistics on wages and salaries. Output indicators on medical, education and recreational services are obtained mainly from the Survey of Quarterly National Income Estimates. For selected cultural and recreational activities such as museums and theatre performances, data on the sale of admission tickets are used as supplementary indicators.

## IV. BENCHMARKING QUARTERLY ESTIMATES OF NOMINAL GDP

41. As explained above, annual estimates of nominal GDP are not computed as the sum of the four quarterly estimates for the year but on the basis of detailed industry accounts compiled from more comprehensive data sources. Thus, the yearly sums of the quarterly estimates would not be expected to be equal to the independently compiled annual estimates.

42. This means that it is necessary to re-align or benchmark the quarterly estimates with the annual process. Benchmarking of quarterly estimates to annual estimates will ensure consistency in these estimates. The benchmarking exercise will result in a revised series of quarterly estimates with growth rates similar to the original series, but whose annual totals will be equal to the annual estimates.

43. If the differences between the yearly sums of the quarterly estimates and the annual estimates were constant, a simple approach would be to distribute the differences among the four quarters using a fixed ratio. However, as the differences vary from year to year, this approach would introduce significant breaks or discontinuities between the fourth quarter estimate of the previous year with the first quarter estimate of the current year.

44. The introduction of these artificial discontinuities may be avoided through quadratic minimisation to obtain a series of re-aligned quarterly estimates which parallels the original series but whose annual totals equal the annual estimates. What this procedure does is to minimise the differences between the re-aligned and original series subject to the constraint that the yearly sums of the re-aligned estimates are equal to the annual estimates.

45. Mathematically, the problem is find a series of re-aligned quarterly estimates,  $y_t$  by minimising

$$\sum \frac{[(y_{i,t} - y_{i,t-1}) - (x_{i,t} - x_{i,t-1})]^2}{x_{i,t}}$$

subject to

$$\sum_{t=1}^4 y_{i,t} = a_i$$

where  $x_{i,t}$  denotes the original estimates for quarter  $t$  in year  $i$

$y_{i,t}$  denotes the re-aligned estimates for quarter  $t$  in year  $i$

$a_i$  denotes the annual benchmark value in year  $i$

46. With this procedure, the adjustments applied to each observation are proportional to its magnitude; the larger values will be adjusted by a larger extent than the smaller values. By avoiding the introduction of artificial discontinuities between the fourth quarter and the first quarter of the following year, this procedure has the further advantage of preserving the seasonality of the original series.

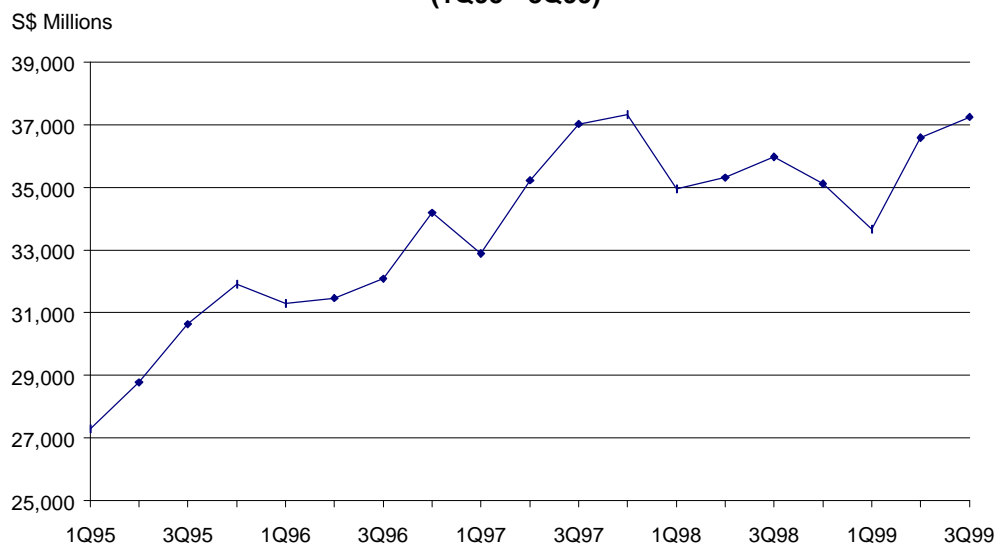
## V. RECENT TRENDS

47. The quarterly estimates of nominal GDP complements the existing quarterly estimates of real GDP by providing an additional perspective on the Singapore economy. The availability of quarterly estimates of nominal GDP facilitates timely assessment of both quantity and price changes in the various industries.

## GDP

48. Boosted by strong economic growth, quarterly nominal GDP has been rising steadily from \$27.3 billion in 1Q95 to a peak of \$37.3 billion in 4Q97. Reflecting the adverse impact of the Asian financial crisis, nominal GDP declines sharply to \$34.9 billion in 1Q98, and hovers around that level in the rest of 1998 before bottoming out at \$33.7 billion in 1Q99. With economic recovery, nominal GDP has rebounded strongly in the last two quarters to the level attained in 4Q97 (see Figure 1).

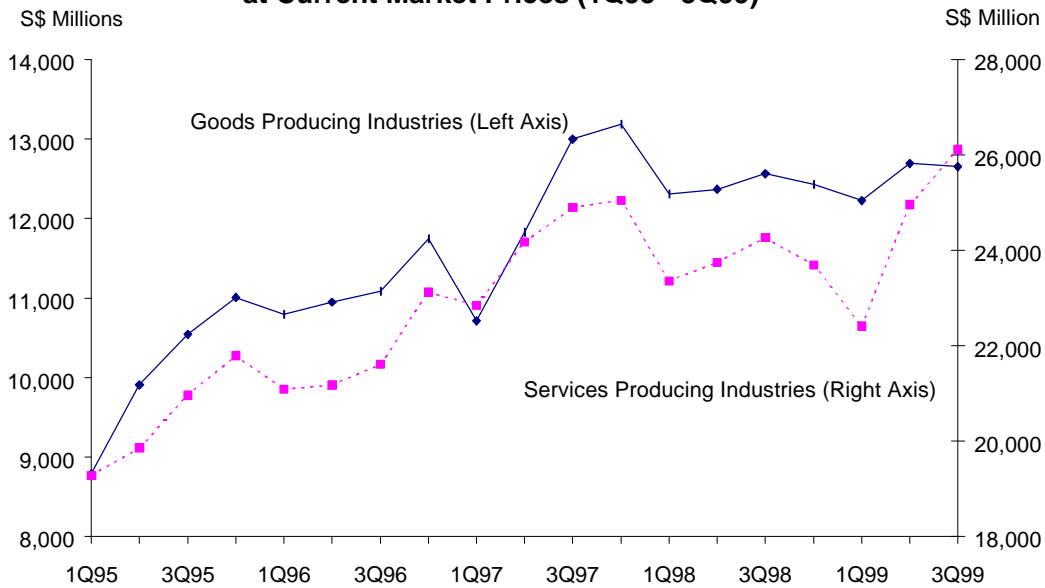
**Figure 1. Total GDP at Current Market Prices  
(1Q95 - 3Q99)**



## *Goods and Services Producing Industries*

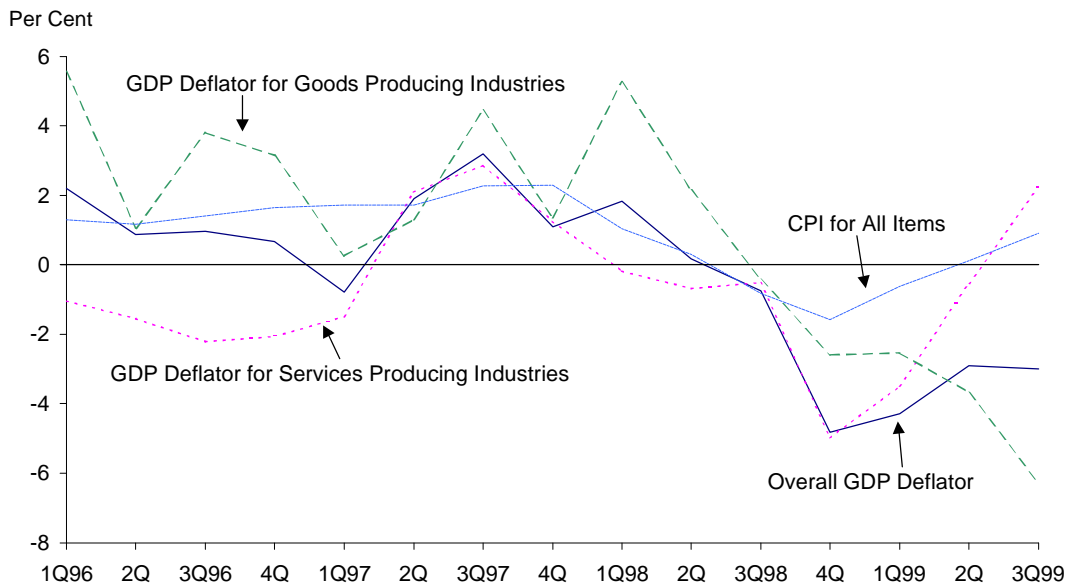
49. The trends in nominal value-added for goods producing and services producing industries are fairly similar (see figure 2), with both increasing steadily from 1Q95 to 4Q97. They declined from 1Q98 as a result of the financial crisis. Both recovered strongly in 2Q99.

**Figure 2. Goods Producing and Services Producing Industries at Current Market Prices (1Q95 - 3Q99)**



50. With the availability of nominal GDP, it is possible to derive quarterly estimates of the (implicit) GDP deflators, the broadest measures of the changes in prices. Figure 3 shows that while the prices experienced by both goods producing and services producing industries have declined in response to the economic slowdown, the services producing industries have experienced a sharper decline. This is due in part to the substantial price reductions in the telecommunications industry. The implicit deflator for services producing industries was the first to record negative growth in 1Q98. The implicit deflator for goods producing industries and the Consumer Price Index began showing negative growth only in 3Q98, two quarters later. With economic recovery, the CPI was the first to revert to positive growth, growing by 0.1 per cent in 2Q99. The implicit deflator for services producing industries followed with a growth of 2.2 per cent in 3Q99. The implicit deflator for goods producing industries is still declining, falling by 6.3 per cent in 3Q99. This is reflective of the sharp decline in the prices of electronic goods, particularly of disk drives.

**Figure 3. Changes in the GDP Deflators and the Consumer Price Index (1Q96 - 3Q99)**



## V. CONCLUSION

51. Historical series of quarterly estimates of nominal GDP from 1990 are provided in the statistical appendix. The complete series starting from 1985 is available from TREND, DOS's on-line public access time series database.

52. With the completion of the project to develop consistent estimates of quarterly nominal output-based GDP, timely quarterly estimates of nominal GDP will be available to complement the existing quarterly estimates of real GDP. These estimates will be disseminated through TREND no later than nine weeks after the end of the reference quarter, and subsequently published in the *Monthly Digest of Statistics*.

## STATISTICAL APPENDIX

**TABLE A1: QUARTERLY GROSS DOMESTIC PRODUCT AT CURRENT MARKET PRICES BY INDUSTRY, 1990-3Q1999**

Million Dollars

	1990				1991				1992			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
<b>Total</b>	15,794.3	16,031.7	16,914.0	17,724.4	17,518.8	17,918.6	18,878.9	19,630.6	18,762.8	19,188.0	20,354.0	21,654.8
<b>Goods Producing Industries</b>	5,255.6	5,640.6	6,048.8	6,136.7	6,229.0	6,383.4	6,781.5	6,807.4	6,321.6	6,717.9	7,167.8	7,574.8
Manufacturing	4,045.0	4,411.5	4,774.0	4,779.5	4,857.0	4,960.2	5,175.8	5,042.2	4,561.3	4,856.3	5,226.0	5,521.2
Construction	865.5	840.1	873.0	1,006.0	1,034.8	1,040.7	1,203.4	1,398.1	1,384.8	1,461.9	1,545.5	1,692.6
Utilities	285.7	332.6	344.4	287.3	285.3	329.4	350.6	314.7	328.4	355.0	353.8	316.1
Other Goods Industries	59.4	56.4	57.4	63.9	51.9	53.1	51.7	52.4	47.1	44.7	42.5	44.9
<b>Services Producing Industries</b>	10,645.5	10,552.3	11,051.5	11,795.3	11,554.2	11,866.4	12,434.8	13,204.3	12,652.2	12,763.4	13,525.9	14,400.1
Wholesale & Retail Trade	2,518.0	2,435.0	2,388.8	2,657.6	2,769.4	2,732.0	2,788.7	2,893.4	2,864.4	2,946.1	2,924.8	3,205.6
Hotels & Restaurants	629.2	624.3	640.7	682.4	612.2	658.4	686.8	722.5	723.4	711.4	726.9	749.5
Transport & Communications	2,106.9	2,138.2	2,212.1	2,284.7	2,247.9	2,487.3	2,637.0	2,682.8	2,513.6	2,452.5	2,622.2	2,631.2
Financial Services	1,851.1	1,763.5	1,886.3	1,720.0	1,904.2	1,944.0	1,980.7	1,975.5	2,144.0	2,191.3	2,440.3	2,463.4
Business Services	1,879.3	1,981.1	2,065.1	2,176.9	2,150.4	2,219.2	2,283.7	2,398.0	2,401.2	2,476.5	2,521.9	2,594.6
Other Services Industries	1,661.0	1,610.2	1,858.5	2,273.7	1,870.1	1,825.5	2,057.9	2,532.1	2,005.6	1,985.6	2,289.8	2,755.8
<b>Owner-Occupied Dwellings</b>	681.9	691.6	696.5	688.4	724.0	762.8	784.8	792.0	816.6	833.0	862.0	873.1
Add: Taxes & Duties on Imports	194.8	125.1	141.3	147.7	161.1	129.6	175.3	171.7	224.8	135.3	187.6	187.9
Less: Imputed Bank Service Charge	983.5	977.9	1,024.1	1,043.7	1,149.5	1,223.6	1,297.5	1,344.8	1,252.4	1,261.6	1,389.3	1,381.1

Note: Other Goods Industries comprise of Agriculture, Fishing and Quarrying.



**TABLE A1: QUARTERLY GROSS DOMESTIC PRODUCT AT CURRENT MARKET PRICES BY INDUSTRY, 1990-3Q1999(Cont'd)**

Million Dollars

	1993				1994				1995			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
<b>Total</b>	21,257.8	22,473.6	23,714.6	25,656.3	24,970.2	25,493.4	27,536.9	28,676.3	27,295.0	28,773.6	30,631.8	31,901.5
<b>Goods Producing Industries</b>	7,242.2	7,746.5	8,239.3	8,318.3	8,075.8	8,736.5	9,231.7	9,303.4	8,795.3	9,909.7	10,543.5	11,008.5
Manufacturing	5,328.7	5,703.3	6,021.0	6,074.8	5,770.5	6,417.7	6,658.2	6,752.0	6,413.0	7,217.9	7,678.3	7,905.3
Construction	1,518.5	1,606.9	1,750.2	1,783.2	1,828.9	1,829.3	2,066.6	2,091.1	1,870.8	2,143.8	2,330.9	2,517.7
Utilities	349.5	390.0	420.3	411.3	422.8	435.8	452.5	403.7	457.8	494.2	478.9	527.1
Other Goods Industries	45.5	46.3	47.8	49.0	53.6	53.7	54.4	56.6	53.7	53.8	55.4	58.4
<b>Services Producing Industries</b>	14,279.8	15,072.8	15,834.2	17,712.4	17,900.3	17,529.2	19,158.7	20,124.9	19,286.2	19,866.6	20,964.0	21,799.8
Wholesale & Retail Trade	3,521.0	3,640.2	3,754.5	3,942.2	4,212.2	4,337.1	4,640.7	4,735.4	4,850.4	4,936.4	5,045.7	5,193.1
Hotels & Restaurants	742.2	745.8	768.6	817.3	808.1	796.5	852.0	872.6	867.8	871.3	922.8	954.6
Transport & Communications	2,651.6	2,800.2	2,971.3	3,094.6	3,008.0	3,113.1	3,383.8	3,473.0	3,334.5	3,473.0	3,661.5	3,763.8
Financial Services	2,521.0	2,969.5	3,082.9	3,955.6	4,233.0	3,524.6	3,949.2	3,736.2	3,752.1	3,891.3	4,036.7	3,827.1
Business Services	2,600.9	2,708.2	2,741.5	2,866.2	3,095.1	3,191.1	3,447.8	3,635.4	3,655.0	3,889.1	4,078.9	4,277.6
Other Services Industries	2,243.1	2,208.9	2,515.4	3,036.5	2,543.9	2,566.8	2,885.2	3,672.3	2,826.4	2,805.5	3,218.4	3,783.6
<b>Owner-Occupied Dwellings</b>	900.8	907.9	923.7	937.6	957.2	972.6	976.2	994.4	1,014.2	1,021.0	1,035.1	1,048.5
Add: Taxes & Duties on Imports	236.0	170.0	217.5	229.9	249.6	143.2	179.4	192.7	252.1	134.0	190.8	175.0
Less: Imputed Bank Service Charge	1,401.0	1,423.6	1,500.1	1,541.9	2,212.7	1,888.1	2,009.1	1,939.1	2,052.8	2,157.7	2,101.6	2,130.3

Note: Other Goods Industries comprise of Agriculture, Fishing and Quarrying.

**TABLE A1: QUARTERLY GROSS DOMESTIC PRODUCT AT CURRENT MARKET PRICES BY INDUSTRY, 1990-3Q1999(Cont'd)**

Million Dollars

	1996				1997				1998				1999		
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr
<b>Total</b>	31,295.0	31,461.0	32,083.8	34,183.1	32,886.6	35,220.7	37,022.7	37,321.0	34,947.3	35,304.9	35,967.1	35,108.7	33,665.0	36,581.6	37,246.9
<b>Goods Producing Industries</b>	10,796.0	10,950.0	11,086.4	11,745.1	10,714.2	11,825.5	12,999.5	13,186.0	12,309.7	12,369.7	12,565.5	12,429.5	12,226.9	12,693.3	12,654.0
Manufacturing	7,633.8	7,628.9	7,420.1	7,954.1	7,230.9	7,905.7	8,524.3	8,852.1	8,183.3	8,064.4	8,137.0	8,179.2	8,695.9	9,158.1	9,070.0
Construction	2,592.8	2,667.0	2,964.9	3,079.1	2,841.1	3,123.9	3,670.8	3,566.5	3,394.6	3,439.4	3,630.9	3,493.9	2,831.9	2,761.7	2,813.0
Utilities	507.6	587.0	634.4	643.5	578.4	721.8	738.9	702.7	674.4	807.0	740.6	699.4	648.0	713.1	714.5
Other Goods Industries	61.8	67.1	67.0	68.4	63.8	74.1	65.5	64.7	57.4	58.9	57.0	57.0	51.1	60.4	56.5
<b>Services Producing Industries</b>	21,091.0	21,177.6	21,612.1	23,122.2	22,854.6	24,178.6	24,900.8	25,052.7	23,359.8	23,750.5	24,269.0	23,695.9	22,415.2	24,963.1	26,114.3
Wholesale & Retail Trade	5,166.9	5,179.9	5,053.9	5,421.7	5,147.7	5,791.2	5,817.5	5,766.0	5,184.4	5,393.8	5,252.4	5,096.3	4,886.4	5,715.1	5,964.5
Hotels & Restaurants	989.2	969.0	970.3	1,041.0	1,010.0	1,024.0	1,021.7	1,043.8	994.0	984.5	945.7	990.4	929.3	971.4	956.4
Transport & Communications	3,513.6	3,645.6	3,686.3	3,922.7	3,662.6	3,943.5	3,965.5	4,133.1	3,759.0	3,944.4	3,963.0	3,956.1	3,738.9	4,041.0	4,190.0
Financial Services	3,777.5	3,623.3	3,670.5	3,833.3	4,693.8	5,060.3	5,178.2	4,559.5	4,580.6	4,927.2	5,426.4	4,721.9	4,456.5	6,082.9	6,354.8
Business Services	4,382.8	4,580.4	4,633.8	4,735.4	4,791.8	4,905.8	5,077.1	5,122.3	4,968.3	4,861.7	4,772.4	4,758.8	4,567.7	4,510.8	4,776.9
Other Services Industries	3,261.0	3,179.4	3,597.3	4,168.1	3,548.7	3,453.8	3,840.8	4,428.0	3,873.5	3,638.9	3,909.1	4,172.4	3,836.4	3,641.9	3,871.7
<b>Owner-Occupied Dwellings</b>	1,088.8	1,077.7	1,098.1	1,115.2	1,139.0	1,149.4	1,189.1	1,222.3	1,251.6	1,241.5	1,245.1	1,271.4	1,278.6	1,267.2	1,270.1
Add: Taxes & Duties on Imports	237.7	129.5	194.9	198.4	242.8	146.2	178.4	185.5	218.4	129.3	186.7	190.0	212.6	161.1	225.2
Less: Imputed Bank Service Charge	1,918.5	1,873.8	1,907.7	1,997.8	2,064.0	2,079.0	2,245.1	2,325.5	2,192.2	2,186.1	2,299.2	2,478.1	2,468.3	2,503.1	3,016.7

Note: Other Goods Industries comprise of Agriculture, Fishing and Quarrying.

**TABLE A2: QUARTERLY GDP DEFLATORS AT MARKET PRICES BY INDUSTRY, 1990-3Q1999**  
(1990=100)

	1990				1991				1992			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
<b>Total</b>	98.7	98.2	100.2	102.7	102.1	102.6	104.1	106.7	104.0	103.9	105.2	108.4
<b>Goods Producing Industries</b>	98.7	99.4	101.7	100.0	106.3	104.5	105.8	103.5	103.4	104.2	105.6	106.7
Manufacturing	99.6	99.3	101.4	99.6	108.3	105.1	105.9	103.1	102.2	102.5	104.3	106.2
Construction	95.2	98.2	101.2	105.1	102.6	104.0	107.2	108.3	109.6	112.4	113.4	114.2
Utilities	97.8	105.5	107.6	89.1	92.0	99.7	100.8	92.1	98.6	100.6	98.7	87.5
Other Goods Industries	94.1	98.3	102.7	105.3	95.1	95.8	92.3	93.4	85.2	85.6	83.2	84.6
<b>Services Producing Industries</b>	98.7	97.2	99.3	104.6	98.9	100.7	102.8	108.2	103.0	102.9	104.9	108.7
Wholesale & Retail Trade	101.3	100.3	99.4	99.0	100.9	101.1	100.6	100.4	105.1	108.6	103.8	102.9
Hotels & Restaurants	98.3	100.1	100.3	101.2	100.0	101.9	102.1	102.2	101.2	101.2	100.2	100.6
Transport & Communications	99.7	99.1	99.0	102.1	101.3	108.3	108.5	109.9	104.0	101.6	103.4	102.9
Financial Services	101.7	98.2	99.2	100.9	96.7	99.2	100.2	105.3	109.0	106.4	109.9	111.4
Business Services	99.0	97.7	99.7	103.4	99.5	100.4	102.7	106.2	102.3	102.9	104.1	105.6
Other Services Industries	90.7	88.5	98.9	121.5	94.7	92.9	102.1	124.5	94.8	94.4	105.3	127.4
<b>Owner-Occupied Dwellings</b>	99.0	101.3	100.8	98.9	102.7	107.9	109.5	109.8	112.1	113.5	115.2	115.3

*Note:* Other Goods Industries comprise of Agriculture, Fishing and Quarrying.

**TABLE A2: QUARTERLY GDP DEFLATORS AT MARKET PRICES BY INDUSTRY, 1990-3Q1999(Cont'd)**  
(1990=100)

	1993				1994				1995			
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr
<b>Total</b>	106.8	107.1	108.7	112.5	109.7	110.1	112.5	115.3	113.4	114.3	114.6	118.2
<b>Goods Producing Industries</b>	110.1	108.4	109.6	109.1	108.9	108.7	107.1	107.5	111.2	113.5	110.3	114.3
Manufacturing	110.7	107.9	108.7	107.8	107.0	107.5	105.5	106.7	110.0	112.1	108.3	112.1
Construction	110.5	111.8	113.8	115.4	115.1	113.9	113.0	113.1	115.1	118.9	118.5	120.9
Utilities	102.5	103.5	106.9	104.6	110.9	107.0	105.6	95.7	112.4	112.8	106.4	118.4
Other Goods Industries	89.9	91.5	92.3	94.2	104.1	103.5	103.8	105.0	110.0	108.7	108.4	108.8
<b>Services Producing Industries</b>	104.3	105.8	108.0	113.5	113.1	112.1	117.0	120.1	115.7	116.2	117.6	121.4
Wholesale & Retail Trade	103.9	109.1	108.6	103.1	108.7	113.8	118.2	109.8	115.5	116.7	116.5	110.7
Hotels & Restaurants	100.0	100.1	99.9	101.6	100.2	103.7	104.8	105.5	105.5	108.4	106.0	107.6
Transport & Communications	102.1	103.8	104.6	108.8	104.8	106.0	108.3	110.1	105.6	105.6	105.6	109.0
Financial Services	113.6	113.5	116.6	126.6	140.5	124.5	128.0	128.3	127.8	125.4	123.2	129.7
Business Services	104.7	105.0	105.8	109.5	110.7	113.0	119.3	123.3	124.7	126.7	129.6	133.0
Other Services Industries	99.2	97.2	106.7	127.3	103.0	103.7	113.8	141.5	107.7	107.8	118.0	137.5
<b>Owner-Occupied Dwellings</b>	117.9	117.4	117.8	117.4	118.8	118.7	117.4	117.4	119.1	118.4	118.2	118.3

Note: Other Goods Industries comprise of Agriculture, Fishing and Quarrying.

**TABLE A2: QUARTERLY GDP DEFLATORS AT MARKET PRICES BY INDUSTRY, 1990-3Q1999(Cont'd)**  
(1990=100)

	1996				1997				1998				1999		
	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr	4th Qtr	1st Qtr	2nd Qtr	3rd Qtr
<b>Total</b>	115.9	115.3	115.7	119.0	115.0	117.5	119.4	120.3	117.1	117.7	118.5	114.5	112.1	114.3	115.0
<b>Goods Producing Industries</b>	117.4	114.7	114.5	117.9	117.7	116.2	119.6	119.5	123.9	118.7	119.1	116.4	120.8	114.3	111.6
Manufacturing	116.0	111.8	109.2	113.8	116.0	111.1	114.3	116.6	123.2	113.5	113.9	110.7	122.7	112.6	108.8
Construction	121.8	121.0	125.8	126.6	121.1	125.5	130.0	124.9	125.0	126.8	129.0	129.8	114.8	117.4	118.4
Utilities	117.4	124.9	130.9	133.7	122.8	140.0	135.9	130.3	127.9	145.1	136.5	128.3	123.3	125.7	124.2
Other Goods Industries	119.3	128.3	128.6	126.7	122.0	135.7	129.7	122.1	116.0	124.3	119.0	113.1	114.8	128.8	123.1
<b>Services Producing Industries</b>	114.5	114.4	115.0	118.9	112.8	116.8	118.3	120.4	112.6	116.0	117.7	114.4	108.7	115.4	120.3
Wholesale & Retail Trade	111.1	115.2	114.4	109.3	107.7	118.8	118.6	111.9	106.5	116.3	114.0	106.4	102.8	115.6	118.5
Hotels & Restaurants	107.9	109.3	107.3	107.9	107.8	111.5	109.2	109.9	110.8	109.9	106.5	105.7	104.6	106.2	103.4
Transport & Communications	100.5	101.5	100.0	105.0	96.5	100.1	97.3	102.3	92.6	94.6	93.5	93.8	87.1	91.1	91.9
Financial Services	118.9	110.3	108.3	115.0	116.1	119.2	122.5	121.5	121.0	133.4	145.6	130.0	128.8	146.0	163.5
Business Services	134.6	135.8	137.1	136.7	135.9	135.5	136.5	136.5	131.9	127.1	124.0	122.4	120.5	118.2	122.7
Other Services Industries	111.4	110.5	119.3	139.2	111.5	111.1	120.6	139.9	115.1	112.0	118.2	128.1	111.5	108.5	113.8
<b>Owner-Occupied Dwellings</b>	120.7	118.4	118.7	118.4	119.6	119.8	121.8	121.6	122.4	120.0	118.8	118.2	116.4	113.6	112.4

Note: Other Goods Industries comprise of Agriculture, Fishing and Quarrying.