

information paper
on
economic statistics

**REBASING OF
SINGAPORE'S NATIONAL ACCOUNTS
TO REFERENCE YEAR 2000**

Singapore Department of Statistics
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REBASING OF SINGAPORE'S NATIONAL ACCOUNTS TO REFERENCE YEAR 2000

I INTRODUCTION

1 The Singapore Department of Statistics (DOS) has completed the rebasing of Singapore's national accounts from base year 1995 to 2000. The rebasing exercise revalues constant price or real gross domestic product (GDP) at the prices prevailing in the new base year. At the same time, it serves to reconcile the different estimates of GDP and provides the occasion for methodological and conceptual reviews and improvements. The estimates of economic growth will be reported on the basis of the rebased series with effect from the Annual Economic Survey (AES) 2005.

2 This paper presents the major improvements to the underlying concepts, methodologies and data sources underpinning Singapore's national accounts. One notable enhancement is the adoption of the recommendation in the United Nations System of National Accounts (SNA) to capitalise software in the national accounts, ie to treat expenditure on software as investment (gross fixed capital formation, GFCF) instead of intermediate consumption. The impact of the rebasing, methodological and data improvements on key macroeconomic aggregates are also presented and discussed.

II REBASING AND RECONCILIATION

3 Changes in current price or nominal GDP reflect the changes in total value of goods and services produced in the economy. These changes result from two effects: (i) price effects or price changes; and (ii) quantity effect or changes in the volume of economic activity. The assessment of economic growth entails the removal or adjustment of the price effect, or equivalently, the compilation of GDP at constant prices¹, the changes of which are often referred to as real GDP growth.

4 Constant price GDP estimates are essentially volume indices, which measure changes in the volume of economic activity while maintaining relative prices constant. Over time, relative prices change. The changes in the prices of goods and services subsequent to the base year will result in relative base-year price weights becoming less representative over time. For this reason, it is necessary to periodically rebase the national accounts, ie revalue constant price GDP estimates at a new base year.

1 Direct deflation and extrapolation are two commonly used methods to derive constant price GDP estimates. The technical details on the underlying methodology are available from DOS' publication on Singapore System of National Accounts 1995.

5 Consistent with international practice, DOS has been rebasing our national accounts once every five years. In doing so, the estimates are updated at the prices prevailing in the new base year. The updating of the base year improves our estimates of economic growth, enhancing their relevance to the underlying changes in relative prices. While the rebasing effect generally reduces slightly the growth rates subsequent to the base year, improvements and revisions/changes to the underlying methodologies, concepts, data sources and coverage could be expected to have a larger impact.

6 Apart from the revaluation of national accounts estimates, the reconciliation of GDP estimates compiled using three independent approaches (output, expenditure and income) in the new base year 2000 is integral to the rebasing exercise. The three different approaches of GDP can be represented by the following identities :

The output approach views GDP as the sum of the value-added of the various industries in the economy and is represented as:

$$\text{GDP} = \Sigma \text{GVA} + \text{Taxes on Products}^2 \quad (1)$$

where GVA is gross value-added valued at basic price

The expenditure approach regards GDP as the sum of final demand components, ie

$$\text{GDP} = \text{C} + \text{G} + \text{I} + (\text{X} - \text{M}) \quad (2)$$

where

C	=	Private Consumption Expenditure
G	=	Government Consumption Expenditure
I	=	Gross Capital Formation
X	=	Exports of Goods and Services
M	=	Imports of Goods and Services

The income approach measures GDP as the sum of the incomes generated by production to: firms (gross operating surplus), households (compensation of employees) and the government (taxes on production and on products).

$$\text{GDP} = \text{GOS} + \text{Rem} + \text{Other Taxes on Production} + \text{Taxes on Products} \quad (3)$$

where

GOS	=	Gross Operating Surplus
Rem	=	Compensation of Employees

2 The technical details on the treatment of taxes on products and valuation of output are presented in the publication "Rebasing of the Singapore System of National Accounts to Reference Year 1995".

7 Conceptually, the three approaches should yield the same GDP estimate. However, due to different data sources, timing and valuation issues, there may be discrepancies between estimates from the different approaches.

8 The reconciliation, which is carried out on the basis of the recently updated 2000 input-output (I-O) tables, serves to cross-validate and ensure the coherence of the three separate measures of GDP derived from diverse and independent data sources. As such, no statistical discrepancy is recorded among the different approaches of GDP estimates for 2000. The reconciliation, methodological and data improvements have also resulted generally in lower statistical discrepancies for most years (Tables 1 and 2).

TABLE 1 STATISTICAL DISCREPANCY BETWEEN OUTPUT-BASED AND EXPENDITURE-BASED GDP

Year	As a Percentage of Output-Based GDP			
	Current Prices		Constant Prices	
	Before Rebasing (GDE)	After Rebasing (GDE)	Before Rebasing (GDE)	After Rebasing (GDE)
2000	0.8	0.0	-1.6	0.0
2001	-0.2	-0.1	-1.7	-0.2
2002	-0.3	0.0	-1.8	-0.8
2003	-1.9	-1.5	-1.7	-1.4
2004	-0.9	0.2	-1.8	-1.4

TABLE 2 STATISTICAL DISCREPANCY BETWEEN OUTPUT-BASED AND INCOME-BASED GDP

Year	As a Percentage of Output-Based GDP	
	Current Prices	
	Before Rebasing (GDI)	After Rebasing (GDI)
2000	-0.7	0.0
2001	0.5	0.2
2002	0.7	0.2
2003	0.4	0.6
2004	1.4	0.8

III CHANGES AND IMPROVEMENTS

9 Apart from rebasing and reconciliation of GDP estimates, methodological improvements, conceptual changes, data revisions and improvements as well as revisions/updating of statistical classifications are often introduced during the rebasing exercise. In other words, the rebasing exercise underscores the significance of the national accounts in yielding a coherent and consistent set of national economic estimates. Hence, the subsequent revisions in our national accounts estimates during the rebasing exercise serves to better reflect the underlying and changing economic conditions in recent years.

10 The improvements and changes carried out in this rebasing exercise can be grouped in the following categories :

- (a) Change in conceptual treatment;
- (b) Change in methodology;
- (c) Improvements in data sources;
- (d) Revisions of data sources; and
- (e) Updating of classification.

(A) Change in Conceptual Treatment

Capitalisation of Software Expenditure

11 DOS has adopted the SNA's recommended treatment on software expenditure in this rebasing exercise. Computer software which is used in the production of goods and services for more than one year are to be treated as intangible fixed assets. This recommendation means that expenditure on computer software is to be treated as Gross Fixed Capital Formation (GFCF) instead of intermediate consumption. This will also ensure consistency in the SNA in which "embedded" or bundled software (ie final expenditure on hardware with embedded software included as a package) has always been capitalised in the national accounts. While computer software covers purchased software (prepackaged and custom) and in-house software development, routine maintenance and repairs on existing software would not constitute investment. In-house expenditure on software that is intended to be sold should also be excluded to avoid double-counting.

12 The change in this conceptual treatment requires comprehensive review and assessment of the underlying methodology and data sources. In the case of several advanced statistical agencies, the review on the treatment of software expenditure was completed and fully implemented in their national accounts in the late 1990s and early 2000s. For instance, the US Bureau of Economic Analysis (BEA) and Statistics Canada have incorporated estimates of software investment in their national accounts in 1999 and 2001 respectively. By adopting the recommended treatment on software expenditure, Singapore will be among the earliest in the Asia-Pacific region to capitalise software expenditure in its national accounts. This conceptual and methodological improvement will further enhance the conformity of our national accounts to international standards and practice.

13 In preparation for the adoption of the SNA's recommended treatment on software expenditure, DOS has carried out comprehensive methodological and data review and development, including a thorough examination of available data sources, modification to our survey questionnaires and discussion with relevant government agencies. The capitalisation of software expenditure has

resulted in the addition of computer software as an asset class in GFCF. Its adoption can be expected to raise the level of GFCF and GDP and result in revisions to the corresponding growth estimates, as software spending will no longer be expensed off but would be amortised over time.

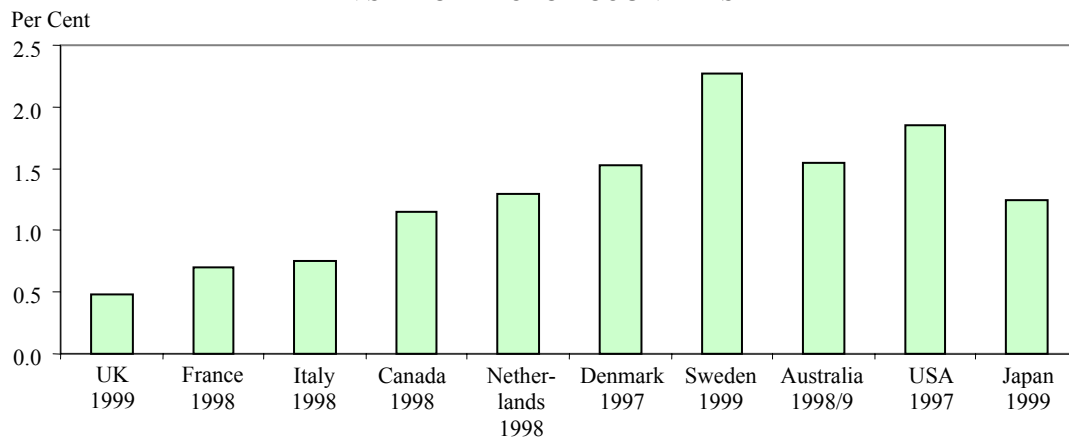
14 Software expenditure is estimated to account for about 2 per cent of GFCF and about 0.5 per cent of GDP (Table 3). Its capitalisation, however, has a small impact on GDP growth, resulting in revisions of less than 0.1 percentage point to the estimated annual GDP growth rates in recent years.

TABLE 3 SHARE OF SOFTWARE INVESTMENT TO GDP AND GFCF AT CURRENT PRICES

Year	Per Cent	
	GDP	GFCF
2000	0.6	2.1
2001	0.6	2.0
2002	0.5	2.0
2003	0.5	2.0
2004	0.5	2.0

15 As shown in Chart 1, the impact of capitalising software expenditure on GDP estimates has also been relatively low (Chart 1) for several OECD countries. One reason suggested for the relatively small impact on GDP estimates is that software embedded in hardware has already been included in the national accounts as investment in plant and machinery. This complication arising from software embedded with hardware has been raised by the OECD Task Force on software, the UK Office of National Statistics (ONS) and others. Computer software is usually embedded indistinguishably with its equipment (eg personal computers) and in industrial machinery with software viewed as an integral component of the hardware. Anecdotal evidences suggest that a fairly considerable proportion of software is, in fact, already included in GFCF estimates of machinery and equipment.

CHART 1 SOFTWARE INVESTMENT AS A SHARE OF GDP IN SELECTED OECD COUNTRIES



Source : Report of the OECD Task Force on Software Measurement in the National Accounts.

16 As noted above, given the inherent difficulties of separating the embedded software from machinery and equipment, GFCF in software will not be separately identified, but will instead be incorporated in GFCF in machinery and equipment which will be re-termed ‘GFCF in machinery, equipment and software’ from Annual Economic Survey 2005 onwards.

(B) Change in Methodology

Wholesale and Retail Trade

17 The estimation of the performance and growth of the wholesale and retail trade industry has been based on trade-related proxy indicators. While these indirect indicators provide reasonable estimates, they could not provide a basis for the dis-aggregation of the industry into wholesale trade and retail trade. With the view of facilitating the dis-aggregation in accordance with the Singapore Standard Industrial Classification (SSIC), DOS has developed the wholesale trade index (WTI), compiling it at current prices since 1997 and at constant prices since 2004. The WTI, together with the retail sales index (RSI), provide direct assessments of performance and growth of wholesale and retail trade.

18 The adoption of the WTI and RSI as the basis for our estimation, in place of the present proxy indicators based on trade statistics, has resulted in an upward revision in both the nominal value-added and real growth estimates of the wholesale and retail trade industry. In addition, the reconciliation on the basis of the 2000 I-O tables has resulted in a further upward revision in the nominal value-added estimate of the industry in the reference year. Taken together, the nominal value-added estimate of wholesale and retail trade has been revised upwards by \$516 million and \$1.0 billion in 2000 and 2004 respectively (Table 4). Real growth rates have also been revised up by an annual average of about 2.2 percentage points from 2000 to 2004.

TABLE 4 WHOLESALE AND RETAIL TRADE INDUSTRY

Year	Upward Revisions in Nominal Value-Added (\$ Million)	Real Value-Added Growth (Per Cent)	
		Before Rebasing	After Rebasing
2000	516.2	14.9	16.1
2001	475.0	-3.3	-2.5
2002	486.3	2.6	8.2
2003	754.5	6.7	9.7
2004	1,001.8	14.6	15.2

(C) Improvement in Data Sources

Census of Construction

19 The Building and Construction Authority (BCA) conducted a Census of the Construction Industry for the reference year 2000 to provide benchmark estimates of construction value-added for the updating of I-O tables and rebasing of the national accounts. With the incorporation of the census results, the construction industry's value-added has been revised downwards by about \$900 million in 2000. Correspondingly, the share of construction in Gross Value-Added (GVA) has declined from 6.3 per cent (before rebasing) to 5.7 per cent (after rebasing) in 2000.

20 In addition to the 2000 Census, BCA has also conducted annual Surveys of the Construction Industry from 1997 to 1999. By incorporating the results of the surveys, historical nominal value-added estimates for the industry have been revised downwards by between \$222 million and \$1.4 billion from 1990 to 2004. Consequently, the rebased GDP series show that construction's nominal value-added grew at an annual rate of 15.9 per cent from 1989 to reach a peak of \$11.6 billion in 1998, lower than the annual growth rate of 17.2 per cent previously estimated.

(D) Revision of Data Sources

*Ownership of Dwellings*³

21 The SNA treats owner-occupiers as household unincorporated enterprises that produce housing services for their own consumption, including their value-added in GDP. The output of these owner-occupied residential buildings is imputed from their annual assessed values estimated on the basis of data provided by HDB and IRAS' Property Tax Division. The value-added is arrived at by deducting intermediate consumption, ie the estimated cost of maintenance and minor repairs.

22 In 2004, IRAS conducted a re-assessment of the annual values of HDB flats to ensure that the assessed values are more in line with the market. The output of owner-occupied dwellings has been correspondingly revised to reflect more accurately the value-added from the housing services provided. This resulted in an upward revision of the GVA of ownership of dwellings by \$1.4 billion, to \$6.7 billion in 2000. Correspondingly, its share in GVA has increased from 3.4 per cent to 4.3 per cent in the same year.

3 Previously known as "owner-occupied dwellings". As the data series also includes residential buildings which are let out by individuals (eg those who owned more than one dwelling), the term "ownership of dwellings" reflects more appropriately the inclusion of both the imputed and rented component.

(E) Updating of Classification

Private Consumption Expenditure (PCE)

23 The previous classification of private consumption expenditure (PCE) by purpose, which has been based on the earlier 1968 SNA, has been updated to bring it in line with the 1993 SNA's recommended Classification of Individual Consumption by Purpose (COICOP). The updated classification (Table 5) provides for the classification of more purposes (eg by its separate identification of the fast-growing communications segment), and re-classifies some PCE components. Being broadly consistent with the classifications adopted by the OECD countries, the updating of the PCE classification will enhance the international comparability of the PCE components in our national accounts. The updating of the PCE classification, however, has no impact on the level and growth rate of overall PCE estimates.

TABLE 5 COMPARISON OF THE PREVIOUS AND EXISTING CLASSIFICATION OF PCE

Previous Classification		Existing Classification	
1	Food & Beverages	1	Food & Non-Alcoholic Beverages
		2	Alcoholic Beverages & Tobacco
2	Clothing & Footwear	3	Clothing & Footwear
3	Rent & Utilities	4	Housing & Utilities
4	Furniture & Household Equipment	5	Furnishings, Household Equipment & Maintenance
5	Medical Services	6	Health
6	Transport & Communication	7	Transport
		8	Communication
7	Recreation & Education	9	Recreation & Culture
		10	Education
8	Other Goods & Services	11	Restaurants & Hotels
		12	Miscellaneous Goods & Services

IV IMPACT OF REBASING (AS AT 3RD QUARTER 2005)

24 The revisions arising from the rebasing exercise are not entirely due to the reconciliation of the GDP estimates and the revaluation of the national accounts to the new base year. As explained above, revisions arise also from the methodological and conceptual changes introduced as well as from improvements in data coverage and data sources.

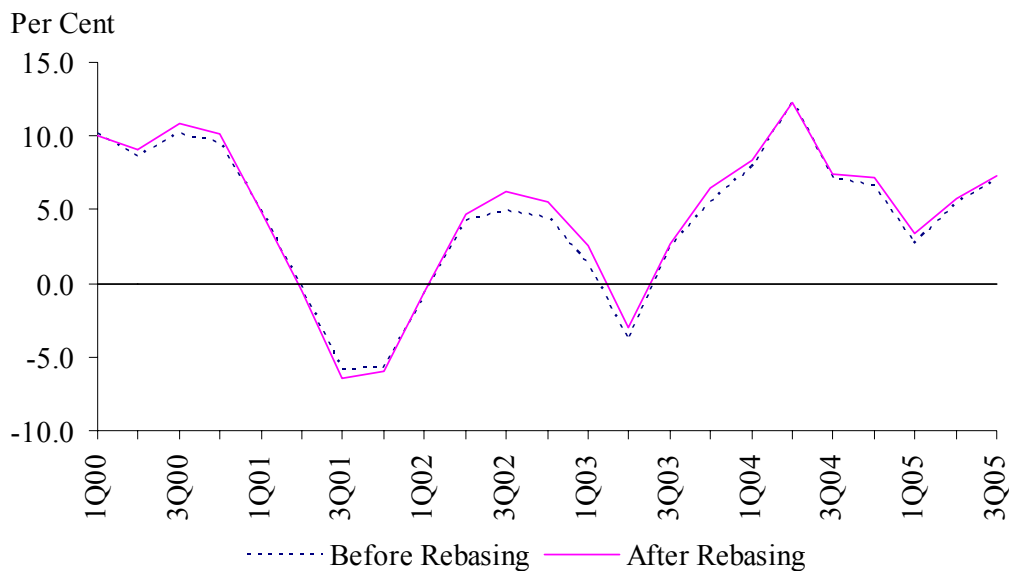
(A) GDP Growth Rates

25 The revisions in real GDP growth have been moderate, ranging between -0.2 and 0.8 percentage points from 2000 to 2004 (Table 6, Chart 2).

TABLE 6 REAL GDP GROWTH

Year	Per Cent	
	Before Rebasing	After Rebasing
2000	9.6	10.0
2001	-2.0	-2.2
2002	3.2	3.9
2003	1.4	2.2
2004	8.4	8.8
2005 Q1	2.7	3.4
Q2	5.4	5.8
Q3	7.0	7.3

CHART 2 GROWTH RATES OF THE OVERALL ECONOMY



26 For the first three quarters of 2005, quarterly GDP estimates have been revised upwards by between 0.3 and 0.7 percentage points. Generally, upward revisions in the contributions to growth from manufacturing, construction, wholesale and retail trade, and business services are partially offset by downward revisions in contributions from transport and communications. In particular, wholesale and retail trade, and business services have contributed an average of 0.4 and 0.1 percentage points, respectively, to the upward revisions in 2005 quarterly GDP growth. Based on the recently released advance GDP estimates, GDP at 2000 prices is estimated to grow by 6.0 per cent in 2005, which is slightly higher than the 5.7 per cent estimated growth at 1995 prices.

(B) Nominal GDP and GNI Estimates

27 The revisions in nominal GDP estimates are relatively moderate at between -0.3 to 0.9 per cent from 2000 to 2004 (Table 7) as the upward revisions in nominal value-added estimates for wholesale and retail trade, transport and communications, business services and ownership of dwellings are offset by downward revisions for manufacturing, construction, financial services and other services. These revisions, as explained above, result from the I-O reconciliation exercise, methodological changes, incorporation of new data sources (eg the Census of Construction) and the improvements of existing data sources such as the expansion of the coverage of the Census of Manufacturing Activities (CMA) to include smaller establishments employing less than 10 persons.

TABLE 7 GDP AT CURRENT MARKET PRICES

Year	Before Rebasing	After Rebasing	Percentage Change
	(a)	(b)	$[(b) - (a)] / (a)$
	\$ Million		Per Cent
2000	159,595.9	159,840.4	0.2
2001	153,771.4	153,367.8	-0.3
2002	158,387.7	157,853.7	-0.3
2003	160,923.6	160,642.1	-0.2
2004	180,554.4	182,112.7	0.9

28 The changes in nominal GDP result in a corresponding change in the Gross National Income (GNI) and per capita GNI. As shown in Table 8, per capita GNI for 2004 has been revised upwards by about 0.7 per cent, from \$41,513 to \$41,819.

TABLE 8 PER CAPITA GNI AT CURRENT MARKET PRICES

Year	Before Rebasing	After Rebasing	Percentage Change
	(a)	(b)	$[(b) - (a)] / (a)$
	\$		Per Cent
2000	39,405	39,466	0.2
2001	37,228	37,131	-0.3
2002	37,065	36,937	-0.3
2003	37,853	37,738	-0.3
2004	41,513	41,819	0.7

(C) Composition of GDP Components

Component Share by Industry

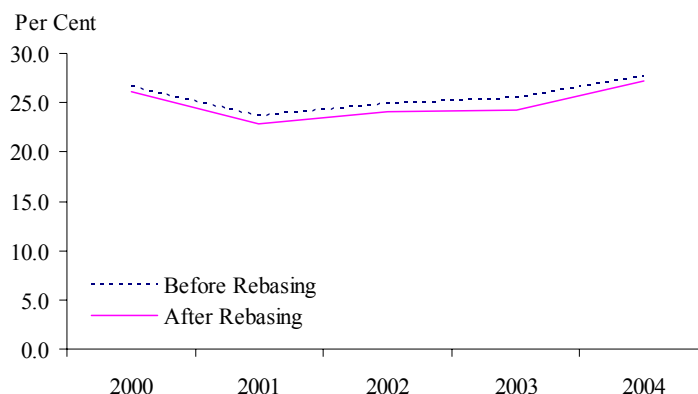
29 In general, the shares of manufacturing and construction in GVA have been revised downwards while shares of ownership of dwellings and wholesale and retail trade have been revised upwards (Table 9). The share of transport and communications has also been revised upwards in recent years, mainly due to the incorporation of new data sources. In particular, its share of GDP has been revised upwards from 11.0 per cent to 11.5 per cent in 2004.

TABLE 9 SHARE OF NOMINAL GROSS VALUE-ADDED BY INDUSTRY

	Per Cent			
	2000		2004	
	Before Rebasing	After Rebasing	Before Rebasing	After Rebasing
Total	100.0	100.0	100.0	100.0
Goods Producing Industries	34.6	33.6	33.8	32.9
Manufacturing	26.6	26.2	27.7	27.2
Construction	6.3	5.7	4.3	3.8
Utilities	1.5	1.6	1.7	1.7
Other Goods Industries	0.1	0.1	0.1	0.1
Services Producing Industries	62.0	62.1	63.0	63.4
Wholesale & Retail Trade	12.7	13.0	14.3	14.7
Hotels & Restaurants	2.2	2.2	2.0	1.9
Transport & Communications	11.7	11.7	11.0	11.5
Financial Services	11.3	10.9	11.3	11.1
Business Services	13.7	13.9	12.7	12.7
Other Services Industries	10.4	10.4	11.7	11.5
Ownership of Dwellings	3.4	4.3	3.2	3.8

30 Manufacturing share in GVA has been revised downwards from 26.6 per cent to 26.2 per cent in reference year 2000, and from 27.7 per cent to 27.2 per cent in 2004 (Table 9, Chart 3 and Table A3). The revisions were mainly due to the lower estimation for smaller establishments identified through the commodity balancing exercise as part of the reconciliation with the 2000 input-output tables.

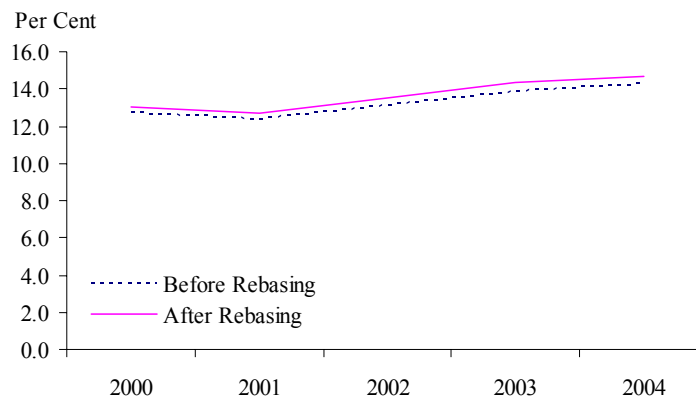
CHART 3 CHANGES IN SHARE OF MANUFACTURING IN NOMINAL GVA



31 With the incorporation of the results from Census of Construction, the share of construction in GVA has also been revised downwards, from 6.3 per cent (before rebasing) to 5.7 per cent (after rebasing) in 2000 and 4.3 per cent (before rebasing) to 3.8 per cent (after rebasing) in 2004 (Table 9 and Table A3).

32 The upward revision in the share of GVA of ownership of dwellings from 3.4 per cent to 4.3 per cent for reference year 2000 (Table 9 and Table A3) is due to the incorporation of IRAS' re-assessed annual values of HDB flats in 2004 as explained above. The share of wholesale and retail trade in GVA has also been revised upwards, from 12.7 per cent (before rebasing) to 13.0 per cent (after rebasing) in 2000 and 14.3 per cent (before rebasing) to 14.7 per cent (after rebasing) in 2004 (Table 9, Chart 4 and Table A3) with the adoption of the WTI and RSI in place of the present proxy indicators as explained above.

CHART 4 CHANGES IN SHARE OF WHOLESALE AND RETAIL TRADE IN NOMINAL GVA



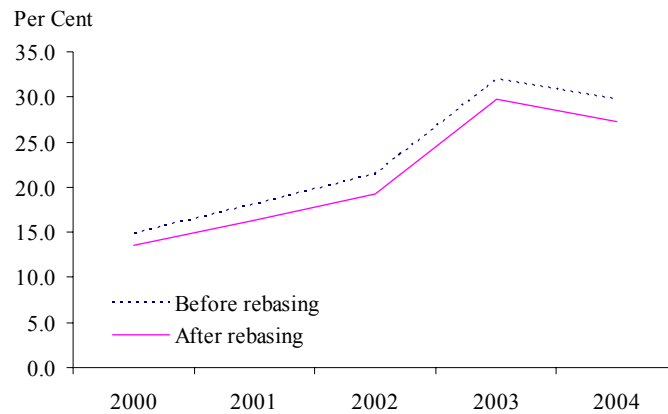
Component Share by Expenditure

33 For expenditure-based GDP, while the share of net exports of goods and services has been revised downwards, the share of PCE was revised upwards (Table 10). For net exports, the downward revisions in share from 14.9 per cent (before rebasing) to 13.6 per cent (after rebasing) of GDP in 2000 and from 29.7 per cent (before rebasing) to 27.3 per cent (after rebasing) of GDP in 2004 (Chart 5) could be largely attributed to the revisions to the data on goods for processing, repairs and merchanting and incorporation of new data sources and improvements to existing data sources.

TABLE 10 FINAL DEMAND AS A PERCENTAGE OF NOMINAL GDP

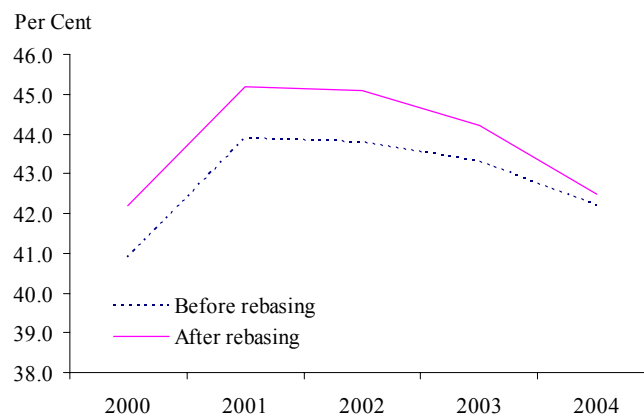
	2000		2004	
	Before Rebasing	After Rebasing	Before Rebasing	After Rebasing
Private Consumption Expenditure	40.9	42.2	42.2	42.5
Government Consumption Expenditure	10.9	10.8	10.6	10.5
Gross Fixed Capital Formation	29.8	30.6	24.0	23.6
Changes in Inventories	2.7	2.7	-5.7	-4.0
Net Exports of Goods and Services	14.9	13.6	29.7	27.3
Statistical Discrepancy	0.8	0.0	-0.9	0.2

CHART 5 NET EXPORTS AS A PERCENTAGE OF NOMINAL GDP



34 The higher share in PCE reflects the revisions in estimates on the ownership of dwellings arising from the re-assessment of the annual values of HDB flats. The share of PCE in GDP was revised upwards, from 40.9 per cent (before rebasing) to 42.2 per cent (after rebasing), in reference year 2000 (Chart 6). Overall PCE at current market prices increased by about \$2.3 billion in year 2000, or 1.4 per cent of GDP.

CHART 6 PCE AS A PERCENTAGE OF GDP AT CURRENT MARKET PRICES



35 The share of GFCF was also revised upwards, from 29.8 per cent (before rebasing) to 30.6 per cent (after rebasing) of GDP for reference year 2000, mainly due to the capitalisation of software expenditure as an asset class in GFCF. For more recent years such as 2004, the share of GFCF was revised downwards marginally from 24.0 per cent (before rebasing) to 23.6 per cent (after rebasing) of GDP despite the capitalisation of software due to data revisions to other components of GFCF such as construction & works and machinery & equipment.

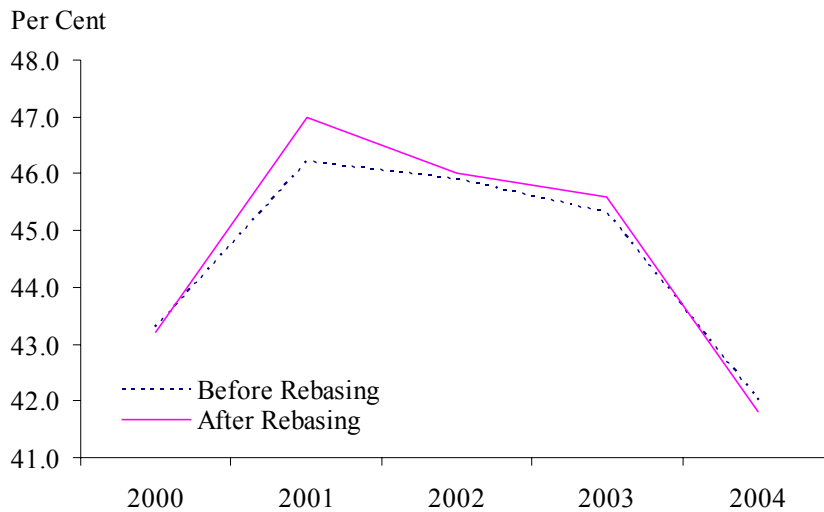
Component Share by Income

36 As noted earlier, current price GDI estimates have been benchmarked and reconciled on the basis of the 2000 input-output tables. Historical estimates

have been consequently reconciled and revised by incorporating the improvements and changes undertaken during the rebasing exercise. Following the reconciliation, the statistical discrepancies between GDI and GDP have generally improved since 2000 as explained above (Table 2).

37 For compensation of employees, its share to GDP has generally been revised upwards except for 2000 and 2004 (Chart 7), reflecting largely the updates in the remuneration data available from survey sources as well as reconciliation process.

CHART 7 SHARE OF COMPENSATION OF EMPLOYEES TO NOMINAL GDP



38 Similarly, the share of gross operating surplus to GDP has been revised by between -0.6 percentage points to 0.9 percentage points (Chart 8) from 2000 to 2004.

CHART 8 SHARE OF GROSS OPERATING SURPLUS TO GDP AT CURRENT MARKET PRICES

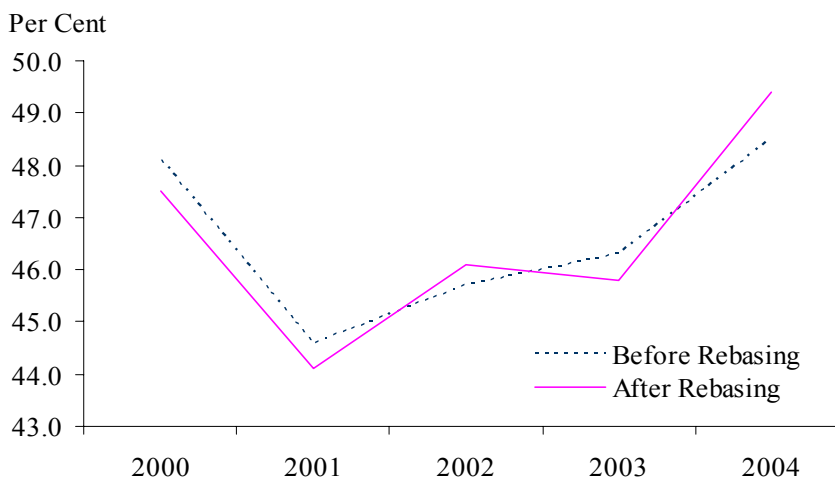


TABLE 11 INCOME COMPONENTS AS A PERCENTAGE OF NOMINAL GDP

	Per Cent			
	2000		2004	
	Before Rebasing	After Rebasing	Before Rebasing	After Rebasing
Compensation of Employees	43.3	43.2	42.0	41.8
Gross Operating Surplus	48.1	47.5	48.5	49.4
Of Financial Corporations	6.6	6.1	6.1	6.0
Of Non-Financial Corporations	38.0	37.8	37.7	38.9
Of Others	9.0	9.1	8.8	8.6
Less : FISIM	5.5	5.5	4.1	4.1
Taxes on Production & Imports	9.3	9.3	8.1	8.0
Statistical Discrepancy	-0.7	0.0	1.4	0.8

Figures may not add up due to rounding.

39 For the I-O benchmark year 2000, the share of compensation of employees to GDP remained relatively stable at about 43 per cent while the share of gross operating surplus (or 'profits') has been revised downwards by 0.6 percentage points to 47.5 per cent (Table 11 and Table A5). Taxes on production and imports as a share to GDP remained unchanged at 9.3 per cent.

V CONCLUSION

40 The successful completion of this rebasing exercise improves the coherence and reliability of our GDP estimates in recent years and enhances its relevance to the underlying and changing economic conditions. The capitalisation of software expenditure, together with the continuing enhancements in the concepts, methodologies and data sources, has further strengthened our existing statistical framework that underpins the compilation of national accounts.

41 The revisions in real GDP growth have been relatively moderate, ranging from -0.2 and 0.8 percentage points from 2000 to 2004. Based on the advance estimates, the 2000-based real GDP is estimated to grow by 6.0 per cent in 2005, which is slightly higher than the 5.7 per cent estimated growth at 1995 prices.

42 A complete set of the rebased statistical series as at 3Q05 can be purchased from DOS using the Singstat Online Data Request Form at <http://app.singstat.gov.sg/user/data.asp>. Subscribers to the Department's Singstat Time Series (STS) may also download the historical data electronically. The data series will be subsequently updated and revised to incorporate more comprehensive and complete data; the preliminary GDP estimates for 2005 will be released in the Annual Economic Survey of Singapore in February 2006.

Statistical Appendix

Appendix

Table A1	Annual Changes in Real Gross Domestic Product
Table A2	Contribution to Growth in Real Gross Domestic Product
Table A3	Share of Gross Value-added at Current Prices
Table A4	Final Demand as a Percentage of Nominal Gross Domestic Product
Table A5	Income Components as a Percentage of Nominal Gross Domestic Product

TABLE A1 ANNUAL CHANGES
IN REAL GROSS DOMESTIC PRODUCT

	Per Cent							
	2000	2001	2002	2003	2004	1Q2005	2Q2005	3Q2005
	Before Rebasing (1995 Prices)							
TOTAL	9.6	-2.0	3.2	1.4	8.4	2.7	5.4	7.0
Goods Producing Industries	11.1	-9.0	3.2	0.5	9.9	2.2	5.1	10.8
Manufacturing	15.1	-11.6	7.8	2.7	13.9	3.5	6.4	13.2
Construction	-0.7	-2.6	-12.1	-9.5	-6.5	-5.4	-1.3	0.5
Utilities	7.5	3.6	4.6	2.8	3.2	5.1	3.6	3.1
Other Goods Industries	-4.9	-5.9	-5.6	-0.7	11.4	0.8	-4.5	-6.1
Services Producing Industries	8.0	2.4	3.1	1.3	7.5	3.5	5.2	5.5
Wholesale & Retail Trade	14.9	-3.3	2.6	6.7	14.6	6.9	8.7	8.0
Hotels & Restaurants	8.1	-0.6	-1.8	-9.9	12.4	1.9	5.2	4.1
Transport & Communications	7.2	4.0	6.2	-1.8	9.1	4.7	4.6	4.6
Financial Services	3.6	3.7	-4.1	4.3	6.0	1.9	7.3	7.0
Business Services	5.3	2.0	4.7	-1.5	2.2	2.0	3.3	5.5
Other Services Industries	9.0	7.3	6.0	2.0	4.5	1.7	1.8	2.5
Owner-Occupied Dwellings	6.3	4.5	2.1	2.8	2.8	2.9	2.7	2.7
FISIM	-2.0	5.8	-1.7	1.4	5.2	3.0	2.0	2.4
Taxes on Products	9.6	-4.0	0.3	6.0	11.1	-1.9	7.6	1.5
	After Rebasing (2000 Prices)							
TOTAL	10.0	-2.2	3.9	2.2	8.8	3.4	5.8	7.3
Goods Producing Industries	11.7	-8.9	3.9	1.1	10.5	2.8	5.3	10.8
Manufacturing	15.2	-11.6	8.4	3.0	13.9	3.5	6.4	13.2
Construction	1.0	-0.4	-14.0	-8.7	-6.4	-2.0	-0.9	-2.1
Utilities	7.5	3.6	4.5	2.4	3.3	4.7	2.5	2.4
Other Goods Industries	-4.9	-2.0	-6.3	1.3	12.3	0.4	-6.1	-7.5
Services Producing Industries	8.3	2.0	3.7	2.2	7.9	4.4	5.8	6.2
Wholesale & Retail Trade	16.1	-2.5	8.2	9.7	15.2	8.8	10.1	10.2
Hotels & Restaurants	8.1	-0.5	-2.4	-9.8	11.8	1.8	5.3	4.2
Transport & Communications	7.3	3.1	5.9	-2.3	8.4	4.3	4.1	4.2
Financial Services	4.0	3.7	-4.0	4.3	7.1	3.2	7.7	6.7
Business Services	5.9	0.5	3.4	-0.3	2.7	2.8	4.0	6.3
Other Services Industries	8.9	7.2	5.5	1.6	4.5	2.1	2.0	2.6
Ownership of Dwellings	6.2	4.0	3.3	2.8	2.7	3.4	2.7	1.6
FISIM	-2.0	6.5	-1.4	1.5	5.0	2.9	2.0	2.1
Taxes on Products	9.6	-3.8	1.3	5.5	10.1	-2.1	6.6	1.0

TABLE A2 CONTRIBUTION TO GROWTH
IN REAL GROSS DOMESTIC PRODUCT

	Per Cent							
	2000	2001	2002	2003	2004	1Q2005	2Q2005	3Q2005
	Before Rebasing (1995 Prices)							
TOTAL	9.6	-2.0	3.2	1.4	8.4	2.7	5.4	7.0
Goods Producing Industries	3.7	-3.0	1.0	0.1	3.1	0.6	1.6	3.4
Manufacturing	3.6	-2.9	1.8	0.6	3.3	0.8	1.6	3.3
Construction	-0.1	-0.2	-0.8	-0.5	-0.3	-0.3	-0.1	0.0
Utilities	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1
Other Goods Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services Producing Industries	5.0	1.5	2.0	0.8	4.8	2.3	3.3	3.5
Wholesale & Retail Trade	1.8	-0.4	0.3	0.8	1.9	0.9	1.2	1.1
Hotels & Restaurants	0.2	0.0	0.0	-0.2	0.2	0.0	0.1	0.1
Transport & Communications	0.9	0.5	0.8	-0.3	1.2	0.6	0.6	0.6
Financial Services	0.4	0.4	-0.5	0.5	0.6	0.2	0.8	0.7
Business Services	0.7	0.3	0.7	-0.2	0.3	0.3	0.4	0.7
Other Services Industries	0.9	0.7	0.7	0.2	0.5	0.2	0.2	0.3
Owner-Occupied Dwellings	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Less : FISIM	-0.1	0.3	-0.1	0.1	0.3	0.2	0.1	0.1
Add : Taxes on Products	0.6	-0.3	0.0	0.4	0.7	-0.1	0.5	0.1
	After Rebasing (2000 Prices)							
TOTAL	10.0	-2.2	3.9	2.2	8.8	3.4	5.8	7.3
Goods Producing Industries	3.8	-3.0	1.2	0.3	3.2	0.8	1.6	3.3
Manufacturing	3.7	-3.0	2.0	0.7	3.4	0.9	1.6	3.4
Construction	0.1	0.0	-0.8	-0.4	-0.3	-0.1	0.0	-0.1
Utilities	0.1	0.1	0.1	0.0	0.1	0.1	0.0	0.0
Other Goods Industries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services Producing Industries	5.2	1.2	2.3	1.4	5.0	2.8	3.7	3.9
Wholesale & Retail Trade	1.8	-0.3	1.1	1.3	2.2	1.3	1.5	1.6
Hotels & Restaurants	0.2	0.0	-0.1	-0.2	0.2	0.0	0.1	0.1
Transport & Communications	1.0	0.4	0.7	-0.3	1.0	0.5	0.5	0.5
Financial Services	0.4	0.4	-0.5	0.4	0.8	0.4	0.8	0.7
Business Services	0.8	0.1	0.5	0.0	0.4	0.4	0.5	0.8
Other Services Industries	0.9	0.7	0.6	0.2	0.5	0.2	0.2	0.3
Ownership of Dwellings	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Less : FISIM	-0.1	0.4	-0.1	0.1	0.3	0.2	0.1	0.1
Add : Taxes on Products	0.6	-0.3	0.1	0.4	0.7	-0.2	0.4	0.1

TABLE A3 SHARE OF GROSS VALUE-ADDED
AT CURRENT PRICES

	Per Cent				
	2000	2001	2002	2003	2004
Before Rebasing					
Goods Producing Industries	34.6	31.9	32.0	32.2	33.8
Manufacturing	26.6	23.6	24.9	25.5	27.7
Construction	6.3	6.1	5.3	4.9	4.3
Utilities	1.5	2.0	1.7	1.7	1.7
Other Goods Industries	0.1	0.1	0.1	0.1	0.1
Services Producing Industries	62.0	64.5	64.4	64.2	63.0
Wholesale & Retail Trade	12.7	12.4	13.1	13.9	14.3
Hotels & Restaurants	2.2	2.3	2.2	1.9	2.0
Transport & Communications	11.7	11.4	11.2	10.9	11.0
Financial Services	11.3	12.4	11.9	11.7	11.3
Business Services	13.7	14.3	13.9	13.6	12.7
Other Services Industries	10.4	11.6	12.1	12.2	11.7
Owner-Occupied Dwellings	3.4	3.6	3.5	3.6	3.2
After Rebasing					
Goods Producing Industries	33.6	30.7	30.8	30.6	32.9
Manufacturing	26.2	22.9	24.2	24.3	27.2
Construction	5.7	5.6	4.7	4.4	3.8
Utilities	1.6	2.1	1.8	1.8	1.7
Other Goods Industries	0.1	0.1	0.1	0.1	0.1
Services Producing Industries	62.1	64.7	64.8	65.2	63.4
Wholesale & Retail Trade	13.0	12.7	13.5	14.4	14.7
Hotels & Restaurants	2.2	2.2	2.1	1.9	1.9
Transport & Communications	11.7	11.5	11.3	11.5	11.5
Financial Services	10.9	12.2	11.9	11.6	11.1
Business Services	13.9	14.4	14.0	13.8	12.7
Other Services Industries	10.4	11.6	12.1	12.1	11.5
Ownership of Dwellings	4.3	4.6	4.4	4.3	3.8

TABLE A4 FINAL DEMAND
AS A PERCENTAGE OF NOMINAL GDP

	Per Cent							
	2000	2001	2002	2003	2004	1Q2005	2Q2005	3Q2005
	Before Rebasing							
Private Consumption Expenditure	40.9	43.9	43.8	43.3	42.2	42.9	41.2	39.5
Government Consumption Expenditure	10.9	12.1	12.3	11.8	10.6	15.6	7.7	8.6
Gross Fixed Capital Formation	29.8	29.6	25.4	24.2	24.0	22.5	21.5	21.7
Changes in Inventories	2.7	-3.6	-2.6	-9.4	-5.7	-5.3	-0.7	-5.1
Net Exports of Goods & Services	14.9	18.1	21.4	32.0	29.7	26.3	30.0	37.0
Statistical Discrepancy	0.8	-0.2	-0.3	-1.9	-0.9	-1.9	0.4	-1.8
	After Rebasing							
Private Consumption Expenditure	42.2	45.2	45.1	44.2	42.5	42.5	41.7	38.9
Government Consumption Expenditure	10.8	12.1	12.3	11.8	10.5	15.4	7.7	8.3
Gross Fixed Capital Formation	30.6	30.0	25.5	24.1	23.6	22.1	21.2	21.3
Changes in Inventories	2.7	-3.5	-2.2	-8.3	-4.0	-3.7	-0.2	-3.3
Net Exports of Goods & Services	13.6	16.3	19.2	29.7	27.3	25.4	29.1	35.0
Statistical Discrepancy	0.0	-0.1	0.0	-1.5	0.2	-1.7	0.7	-0.2

**TABLE A5 INCOME COMPONENTS
AS A PERCENTAGE OF NOMINAL GDP**

	Per Cent				
	2000	2001	2002	2003	2004
	Before Rebasing				
Compensation of Employees	43.3	46.2	45.9	45.3	42.0
Gross Operating Surplus	48.1	44.6	45.7	46.3	48.5
of Financial Corporations	6.6	7.3	7.6	6.6	6.1
of Non-Financial Corporations	38.0	34.4	35.0	35.5	37.7
of Others	9.0	9.5	9.2	9.4	8.8
Less : FISIM	5.5	6.6	6.1	5.2	4.1
Taxes on Production & Imports	9.3	8.7	7.7	8.0	8.1
Statistical Discrepancy	-0.7	0.5	0.7	0.4	1.4
	After Rebasing				
Compensation of Employees	43.2	47.0	46.0	45.6	41.8
Gross Operating Surplus	47.5	44.1	46.1	45.8	49.4
of Financial Corporations	6.1	7.3	7.4	6.0	6.0
of Non-Financial Corporations	37.8	33.8	35.6	35.8	38.9
of Others	9.1	9.6	9.2	9.2	8.6
Less : FISIM	5.5	6.6	6.1	5.2	4.1
Taxes on Production & Imports	9.3	8.7	7.7	8.0	8.0
Statistical Discrepancy	0.0	0.2	0.2	0.6	0.8

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