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THE CONSEQUENCES OF THE IMPLEMENTATION OF THE SUPPLY AND USE TABLES IN SOUTH AFRICA.

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1. INTRODUCTION

This paper presents the consequences of the implementation of the 1993 System of National Accounts (SNA) in South Africa by Statistics South Africa (Stats SA), with regard to the introduction of a framework of supply and use tables (SU-tables).

This is a new concept in South Africa and a major change in the reference framework for the integration of national accounts. SU-tables are an essential part of the 1993 SNA integrated national accounting structure.

The paper is divided into seven main areas, namely -

- an outline of Input-Output tables in South Africa;
- comparison between input-output and supply and use tables;
- historic structure of the South African supply and use tables;
- statistical sources and methods;
- consequences of the implementation process:
    - supply and use tables as a tool to balance the national accounts;
    - the effect on the collection and sources of basic data;
    - decreasing the time-gap between publication and reference year;
- future of South African supply and use tables; and
- conclusion.

2. AN OUTLINE OF INPUT-OUTPUT TABLES IN SOUTH AFRICA

The first official input-output tables for South Africa were compiled for the years 1956-57, 1960-61 and 1963-64. The former Office of the Economic Advisor to the Prime Minister compiled these input-output tables and it specifically served as a basis for the Economic Development Programme in those days.

Stats SA compiled final input-output tables from basic data for the following years:

- No 09-16-01 Input-output tables, 1967
- No 09-16-02 Input-output tables, 1971
- No 09-16-04 Input-output tables, 1975
- No 09-16-05 Input-output tables, 1978
- No 09-16-05 Input-output tables, 1981
- No 09-16-05 Input-output tables, 1981 (imports separately)
- No 04-02-01 (1984) Input-output tables, 1984
- No 04-02-02 (1984) Input-output tables, 1984 (imports separately)
- No 04-02-01 (1988) Input-output tables, 1988
- No 04-02-02 (1988) Input-output tables, 1988 (imports separately)
- No 04-02-01 (1989) Input-output tables, 1989
- No 04-02-02 (1989) Input-output tables, 1989 (imports separately)

Stats SA also compiled the following preliminary input-output tables:

- No 09-16-03 Input-output tables, 1975
- No 09-16-03 Input-output tables, 1978
- No 09-16-03 Input-output tables, 1981
- No 09-16-03 Input-output tables, 1985
- No 04-02-03 (1988) Input-output tables, 1988
- No 04-02-03 (1993) Input-output tables, 1993
- No 04-02-04 (1993) Input-output tables, 1993 (imports separately)

The input-output tables from 1981 and onwards were also adjusted to show imports separately. In these tables imports were shown in total as an input to each economic activity as well as for private consumption expenditure, consumption expenditure by general government, gross fixed capital formation and change in inventories. Apart from the general uses of the input-output tables, the particulars on imports could be applied effectively by users of the table to study the importance of imports in general and in particular their effect on each industrial sector and components of final demand.

Three tables were presented in the above publications:

a) Table 1: An input-output table at basic values, which was also known as a transaction or flow table. Table 1 reflected the value of transactions that took place between the various industries.

b) Table 2: The input coefficient or direct requirements table, which was derived from table 1. Table 2 showed all the direct requirements of each industry in relation to the total output of the industry.

c) Table 3: An inverse coefficient or total requirements table, which in turn was derived from table 2. Table 3 showed the total requirements (direct and indirect) per rand of output delivered to final demand. By means of this table it was possible to calculate the impact of a change in final demand on the various industries.

There was no ideal size for an input-output table. The availability of statistical data and the analytical uses for which it was required, determined the number of industrial sectors that were distinguished for the compilation of an input-output table. To reduce costs and save time, Stats SA compiled a table of a sufficient size to comply with the requirements of the most important users. The input-output tables for South Africa mentioned above were compiled at a 95- industry level and six categories of final demand. As the tables contained confidential information, slightly smaller tables were published.

The classification of the industries was based on the Standard Industrial Classification of all Economic Activities of South Africa, which was based on United Nations International Standard Industrial Classification of all Economic Activities.

Stats SA also compiled a Final Social Accounting Matrix for South Africa for the year 1988 (No 04-03-02 (1988) Final Social Accounting Matrix for South Africa, 1988). The Central Economic Advisory Service compiled the first Social Accounting Matrix for South Africa for the year 1978.

3. COMPARISON BETWEEN INPUT-OUTPUT AND SUPPLY AND USE TABLES

A. Introduction

In national accounting and economic analysis two kinds of input-output tables are refer to:

- Symmetric input-output tables;
- Supply and use tables.

The major difference between a symmetric input-output table and supply and use tables is:

- A symmetric input-output table is a product by product or industry by industry matrix. A symmetric input-output table rearranges both supply and use in a single table and either a product or an industry classification is used for both rows and columns.
- The SU-tables framework has two tables. The SU-tables are industry by product matrices and both industry and commodity classifications are used. The SU-tables are often referred to as rectangular input-output tables.

B. Situation in South Africa

a) Introduction

In the past Stats SA compiled and published industry by industry input-output tables at basic prices. With the implementation of the 1993 SNA in South Africa, Stats SA's focus changed to the compilation of SU-tables.

b) Adjustments Stats SA made for the compilation of SU-tables

- Data sources

The compilation of SU-tables places a heavy burden on source data. More data sources had to be used with the change from industry by industry matrices to industry by product matrices. Secondary production in the South African input-output tables were treated as transfers between industries and were shown as two rows in the input-output tables. With the introduction of the supply table, all the secondary production had to be shown in a 94-by-94-matrix.

According to the 1993 SNA, one of the main reasons for the compilation of SU-tables is to calculate the levels of Gross Domestic Product (GDP). In order to reach this aim, Stats SA not only has to reduce the time lag between the publication of SU-tables and the

reference year of these SU-tables, but also to improve the quality and consistency of the various data sources.

- Balancing method

The 1993 SU-tables of South Africa were balanced through the application of the "commodity flow method", where applicable. Although the 1993 SU-tables were adjusted to the given national accounts estimates of GDP aggregated industrial sector levels, the SU-tables were not totally balanced and the discrepancies between the supply and use of products at a detail level were published as a column in the use table. Previously the input-output tables were totally balanced, by using the RAS method, but were not totally reconciled with national accounts as the tables were compiled and published in basic prices.

- Methodology changes

Stats SA published the 1993 SU-tables of South Africa, which formed part of the implementation of the 1993 SNA. The 1993 SNA made some methodology changes on the 1968 SNA, which had an influence on the treatment of data.

c) Some problems encountered in compiling SU-tables in South Africa

- Government consumption expenditure

The 1993 SNA divided government consumption expenditure into individual consumption and collective consumption. Data, which separated individual and collective consumption in the required commodities, is not available prior to 1995. Furthermore was there a drastic change in the structure of government consumption expenditure, especially in the provinces, after South Africa's election of 1994. It was therefore impossible to use the same individual and collective consumption structures for 1993. For the 1993 SU-tables it was decided to combine the individual and collective consumption expenditure.

The 1993 SNA recommends that only expenditure on military destructive weapons should be treated as consumption expenditure. Previously almost all military expenditure was treated as current expenditure which formed part of government consumption expenditure. According to the 1993 SNA all defence force expenditure on fixed assets of a kind that could be acquired by civilian users for purpose of production and used by military establishments in the same way, should be treated as fixed capital formation. For the 1993 SU-tables all defence force expenditure on, inter alia, hospitals and other buildings were treated as gross fixed capital formation.

- Gross fixed capital formation

The 1993 SNA recommends that the acquisition *less* disposals of valuables be added to gross fixed capital formation and changes in inventories to calculate gross capital formation. It was however not possible to include any estimates for the acquisition *less* disposals of valuables in the 1993 SU-tables.

Severe data constraints resulted in four further recommendations of the 1993 SNA relating to gross capital formation not being implemented. These are the treatment of expenditure on -

- mineral exploration;
- computer software;
- literary or artistic works; and
- cultivated assets.

The estimates of gross fixed capital formation published by SARB include some of the above, but Stats SA could not obtain exact figures and therefore did not implement these recommendations of SNA93.

- Transport margins

Transport margins constitute part of the output of transport of goods. Basically, there are two methods of treating transport margins in SU-tables:

- When transport is arranged in such a way that the purchaser has to pay separately for the transport costs, in other words if the transport costs are separately billed, these costs are then identified as transport margins. This implies that customers not only buy the goods, but also buy transport services from producers.
- If the producer transports the goods, or arranges for it to be transported without extra cost to the purchaser, transportation will appear as intermediate consumption to the producer, and it will simultaneously be included in the basic price.

Both methods mentioned above were applied in the 1993 SU-tables. The total transport margins were calculated as the difference between the transport services that were supplied on goods and the use of transport services by the applicable industries. The rest of the transport costs were treated as intermediate consumption.

- Classification

The 1993 SNA recommends that the United Nations International Standard Industrial Classification of all Economic Activities (ISIC) must be used for the classification of the industries. For the commodities, the United Nations Central Product Classification (CPC) must be used.

Stats SA used the 1993 edition of the Standard Industrial Classification of all Economic Activities (SIC) to classify the industries. The SIC is based on the 1990 ISIC (third revision), with suitable adaptations for South African conditions.

In the past, Stats SA hasn't used a commodity classification system. A commodity classification was developed for use in the SU-tables which is closely related to the SIC classification. The aim was to simplify the process of creating square SU-tables.

- Foreign trade statistics

The detailed trade statistics from the Department of Customs and Excise were classified according to the Harmonised commodity classification system. As mentioned above, a commodity classification system was developed for use in the SU-tables. Import and export data, consisting of 14000 commodities, were reclassified to the level of detail that was required in the SU-tables.

- Taxes and subsidies

In accordance with the 1993 SNA recommendation, South Africa has adopted the revised classification and terminology of taxes. The 1968 SNA term "indirect taxes" has been replaced by the term "taxes on production and imports" and the 1968 SNA term "direct taxes" has been changed to "current taxes on income and wealth". Furthermore, the distinction between "commodity taxes" and "other indirect taxes and imports" has been replaced by the terms "taxes on products" and "other taxes on production".

The definition of taxes also changed and there was not a direct link between the old and new terminology. The data on taxes in the audited financial reports of the government was published on the old terminology and also not in the commodity format that was required for the compilation of the SU-tables. The same problem was experienced with subsidies.

As Stats SA compiles and publishes SU-tables a number of years after the reference year (1993 SU-tables in 1999), the questionnaires used in data collection were not changed for compliance with new definitions required by 1993 SNA in time.

- Data confrontation

The SU-tables, often regarded as the cornerstone of the 1993 SNA, provide a framework for checking the consistency of statistics on flows of goods and services obtained from quite different kinds of statistical sources. The SU-tables serve as a basis for calculating most of the economic data contained in the national accounts and to detect weaknesses in the data.

Due to this powerful tool, the SU-tables showed that some industries in the manufacturing sector were incorrectly classified. The industries were reclassified and the data in the manufacturing census was corrected.

The communication industry expanded rapidly during the last few years, namely cellular telephone networks, internet service providers and satellite television. In the past, no data was published for the communication industry. The output of the communication industry can be estimated more accurately on the basis of financial data obtained from the relevant companies. This information helped that the data of the communication industry is included more accurately in the use table.

- Imposed bounds

According to the 1993 SNA, one of the main reasons for the compilation of the SU-tables is to calculate the levels of GDP from all three approaches (production, income and expenditure approach). When the 1993 SU-tables were compiled, the GDP was already calculated and published. Although the published GDP was calculated and evaluated from all three approaches, it was done on a more aggregated industrial level of detail. The published 1993 SU-tables were adjusted to the given GDP aggregated industrial levels.

Banks and other financial intermediaries provide services for which they do not charge explicitly. In this situation, national accounts must use an indirect measure of the value of these services. This is labelled financial services indirectly measured (FSIM). The 1993 SNA recommends that FSIM has to be allocated to users. A portion of FSIM is now recorded as intermediate consumption by industries. The other portion of FSIM is used by household and is included in private consumption expenditure. With the compilation of the 1993 SU-tables, FSIM was already calculated and treated as a fixed value.

4. HISTORIC STRUCTURE OF THE SOUTH AFRICAN SUPPLY AND USE TABLES

A. Introduction

The SNA was revised in 1993. The 1993 SNA provides a comprehensive framework in which basic statistical data may be presented with minimum manipulation. The SU-tables are an integral part of the new system and play an important role as an integration framework.

In the supply and use framework, statistical data is realistically presented as follows:

- Any producing unit may engage in more than one activity producing more than one type of product (the principal and secondary activities of a industry will be shown).
- Goods and services as output are as far as possible valued at the prices at which it first entered the market (a product will be supplied at basic prices).
- Goods and services as intermediate or final products are valued at the prices which users have to pay for them (a product will be used at purchasers' prices).

The 1993 SNA prescribes three ways in which goods and services may be measured/valued namely at basic prices, producer's prices or purchaser's prices:

Basic prices
plus taxes on products (excluding VAT)
less subsidies on products
= **Producers' prices**
plus trade margins
plus transport margins
plus non-deductible VAT
= **Purchasers' prices**

The SU-tables are intended to include all the transactions in goods and services in the economy for a specific year in a matrix format. The SU-tables are an extremely useful device to arrange basic statistics for the compilation of value added by industry and final demand by products. The SU-tables serve as a co-ordinating framework to ensure the numerical consistency and accuracy of data obtained from different sources i.e. industrial surveys, households surveys, investment surveys, foreign trade statistics. The SU-tables are also important in analysing and evaluating the performance of an economy over time.

B. Implementation of the 1993 SNA

Stats SA, along with the South African Reserve Bank (SARB), has assumed from 1946 a major responsibility for the compilation of South Africa's national accounts. However, there was always a clear distinction between the areas concentrated by Stats SA and the SARB. The SARB focuses on the short-term estimates and on reconciling the core accounts on a quarterly basis through the expenditure approach. Stats SA compile the quarterly estimates of the GDP by using the production approach.

The 1993 SNA was implemented in South Africa in conjunction with rebasing and benchmarking of GDP estimates. Stats SA published 1993 SU-tables of South Africa, which were an extension of the implementation of the 1993 SNA. These were the first official SU-tables published by Stats SA. The information contained in the SU-tables reconciles with other components of the national accounts, such as the GDP and the expenditure on the GDP.

C. SU-tables of South Africa

a) Structure

The published 1993 SU-tables of South Africa comprised of 94 industries and 95 commodities. The supply table shows the origin of the resources of goods and services at basic prices. An additional row was added for the adjustment of direct purchases by South African residents abroad.

The use table shows the uses of goods and services and supplies information on the cost structures of the various industries. The table is divided into three different sections:

- The first section shows the goods and services used as intermediate consumption at purchasers' prices.
- The second section shows the components of final demand, namely, exports, households consumption expenditure, general government consumption expenditure, fixed capital formation and changes in inventories at purchasers prices.
- The third section elaborates on the production costs of producers other than intermediate consumption namely, compensation of employees, taxes less subsidies on production and imports and gross operating surplus/mixed income.

b) Classification

Stats SA used the 1993 edition of the SIC to classify the industries. The SIC is based on the 1990 ISIC (third revision), with suitable adaptations for South African conditions. A commodity classification was developed for use in the SU-tables which is closely related to the SIC classification. The aim was to simplify the process of creating square SU-tables.

List of the major divisions of the SIC:
1. Agriculture, hunting, forestry and fishing. (1)
2. Mining and quarrying. (3)
3. Manufacturing. (76)
4. Electricity, gas and water supply. (2)
5. Construction. (2)
6. Wholesale and retail trade; repair of motor vehicles, motor cycles and personal and household goods; hotels and restaurants. (2)
7. Transport, storage and communication. (2)
8. Financial intermediation, insurance, real estate and business services. (3 / 4)
9. Community, social and personal services; other activities not adequately defined. (3)

The number of industries and commodities in the 1993 SU-tables of South Africa are given in brackets in the list above. The availability of statistical data and the analytical uses for which it was required determined the number of industries and commodities. From the numbers it is clear that most of the industries and commodities in the 1993 SU-tables of South Africa relate to manufacturing.

c) Condensed 1993 SU-tables

The condensed supply table (Table 1, page 14) shows the supply of goods and services by product and by type of supplier, distinguishing output by domestic industries and imports. In the supply table the goods and services produced in the economy are measured at basic prices. The total supply at purchasers' prices is obtained by adding to the supply of goods at basic prices their margins, net taxes on products and imports.

The condensed use table (Table 2, page 15) shows the use of goods and services by product and by type of use, intermediate consumption by industry, households, general government, gross fixed capital formation, changes in inventories or exports. All the intermediate costs are measured in purchasers' prices. The use table also shows gross value added/GDP, which consist of compensation of employees, taxes on production, subsidies on production and gross operating surplus. The 1993 SNA recommends that gross value added by the various industries be valued at basic prices.

Table 1 - Supply of products at basic prices 1993: R million

Supply of products	Total supply at purchasers' prices	Taxes less subsidies on products	Trade and transport margins	Total supply at basic prices	Industry									Total Industry	Import
					Agri-culture	Mi-ning	Manufac-turing	Elec-tricity	Construc-tion	Trade	Trans-port	Business services	Commu-nity services		
Agriculture	**34 066**	479	3 148	30 440	28 333		69							**28 402**	2 038
Mining	**59 969**	2 342	1 853	55 773		49 548								**49 548**	6 226
Manufactu-ring	**409 722**	26 599	81 238	301 885		163	247 977							**248 141**	53 744
Electricity	**21 543**	360		21 183				21 179						**21 179**	4
Construction	**44 593**	1 469		43 124	412	1 648		555	40 344					**42 959**	165
Trade	**22 583**	694	(77 898)	99 788		55	4 046	26	63	93 775	32			**97 998**	1 790
Transport	**52 225**	(1 227)	(8 341)	61 793							57 237			**57 237**	4 556
Business services	**103 250**	2 600		100 650		89	4 897		532	55	122	93 607		**99 302**	1 348
Community services	**141 388**	1 976		139 412			6 681			3 785		1 294	127 123	**138 882**	530
Direct purchases abroad by residents	**5 516**			5 516											5 516
Total	**894 856**	**35 291**	**0**	**859 565**	**28 745**	**51 504**	**263 671**	**21 760**	**40 939**	**97 615**	**57 392**	**94 901**	**127 123**	**783 648**	75 917

Table 2 - Use of products at purchasers' prices 1993: R million

Supply of products	Total supply at purchasers' prices	Taxes less subsidies on products	Trade and transport margins	Industry									Total Industry	Total economy	Final demand
				Agri-culture	Mi-ning	Manufac-turing	Elec-tricity	Construc-tion	Trade	Trans-port	Business services	Commu-nity services			
Agriculture	**34 066**			1 424	27	21 575	7	3	320	2	13	317	**23 688**		10 378
Mining	**59 969**			106	142	12 757	2 229	1 238	7	85	23	230	**15 817**		43 152
Manufactu-ring	**409 722**			7 984	8 317	97 890	1 234	17 106	12 393	12 526	5 754	19 539	**182 645**		226 977
Electricity	**21 543**			363	2 660	4 736	2 607	199	1 475	1 099	683	1 253	**15 075**		6 469
Construction	**44 593**			95	441		702	5 940	1 071	311	998	1 918	**11 476**		33 116
Trade	**22 583**			106	85	799	44	107	3 710	1 908	1 295	2 697	**10 751**		11 832
Transport	**52 225**			1 564	5 477	7 582	194	441	7 586	2 201	2 162	2 098	**29 305**		22 920
Business services	**103 250**			543	1 192	13 845	796	2 998	13 963	4 375	20 010	7 942	**65 663**		37 587
Community services	**141 388**			277	3 109	21 845	17	590	622	912	1 100	8 814	**37 286**		104 102
Direct purchases abroad by residents	**5 516**														5 516
Direct purchases by non-residents															
Total uses	**894 856**			12 461	21 452	181 029	7 831	28 621	41 147	23 419	32 039	44 808	**392 807**		502 049
Total gross value added/GDP		41 611	(6 321)	16 284	30 052	82 642	13 930	12 318	56 468	33 972	62 861	82 315	**390 841**	**426 131**	
Total				**28 745**	**51 504**	**263 671**	**21 760**	**40 939**	**97 615**	**57 392**	**94 901**	**127 123**	**783 648**		

d) Time of recording

Domestic production of goods is recorded at the time they are produced, and that of services at the time they are provided. Intermediate consumption of goods and services is recorded at the time they are actually used in the production process. Final consumption of goods and services by households and general government is recorded at the time they are purchased irrespective of their delivery in general. Goods for fixed capital formation are recorded at the time they are delivered, and changes in inventories are recorded at the time legal proprietary rights are transferred. Imports and exports are recorded at the time of customs clearance.

e) Balancing process

The 1993 SU-tables were balanced through the application of the "commodity flow method", where applicable. This is a method whereby the detailed supply of goods and services (whether imported or domestic produced) is allocated between various intermediate or final uses, including exports. It is reliant on detailed basic statistics and is most powerful when independent estimates are made for both the supply and the use of each commodity.

The first step in the balancing process of the 1993 SU-tables was to concentrate on balancing of information relating to specific industries. Production and generation of income accounts were compiled for each industry, ensuring that the calculation of GDP was consistent from both the production and the income approach.

Secondly the estimates/structures referring to components of final demand in the 1993 SU-tables were adjusted to comply with the level estimates published by the SARB in their June 1999 quarterly bulletin. This allowed for the construction of a goods and services account, from which the difference (residual item) in the calculation of the GDP from the expenditure side and the production/income approach could be estimated.

The third phase of the balancing process was to disaggregate the output and intermediate consumption items of the industrial production accounts across the detailed product categories. A similar process was followed for the components of final demand in the goods and services account, as well as for the estimates of taxes and subsidies on products.

The fourth step was the calculation of trade and transport margins. This was required to adjust the valuation of the supply of products from basic to purchasers' prices. After this, the residual item, as calculated in the second step, was allocated according to product classification in the use table.

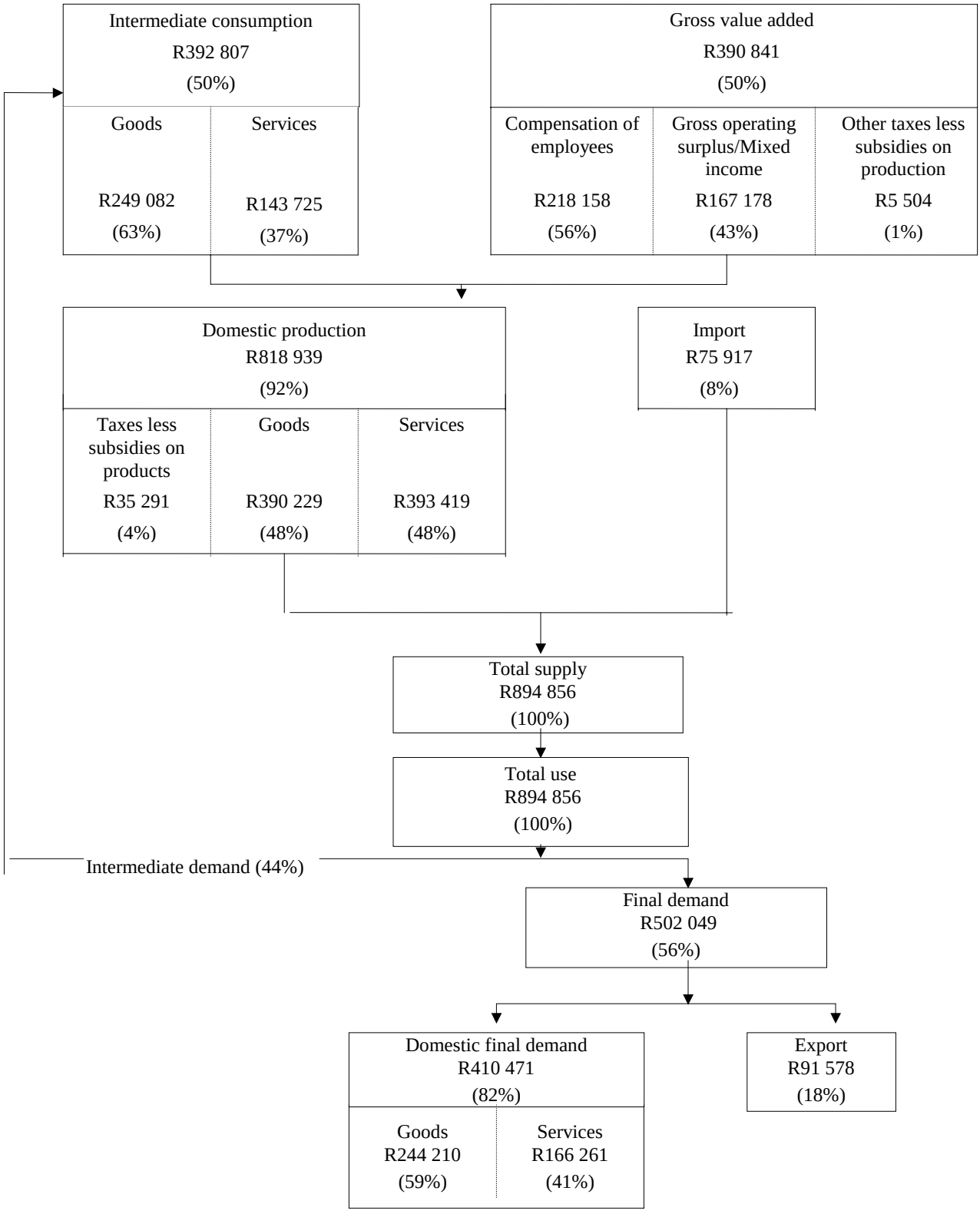
During the fifth step, the initial discrepancy (both positive and negative), between the supply and use of products at purchasers' prices, was addressed through data confrontation and the use of the commodity flow approach. This entailed the verification of the quality of the data and the classification thereof, on both sides of the equation, for each product. After investigation of the data, judgmental decisions were required in order to adjust the total supply or use of products at purchasers' prices.

In cases where sound decisions could not be made as to the accuracy of contradicting statistics and where historic trends and patterns proved insufficient, the results were left unchanged.

f) Flow of goods and services according to the 1993 SU-tables

As an alternative, the flows of goods and services in the economy, as well as macro-economic concepts associated with the flows, can be explained through using a diagram (Figure 1, page 18). This diagram is based on the principle that total supply = total use (demand) in the economy. It further shows that total supply (R894 856 million) can be derived by adding domestic production (R818 939 million) and imports (R75 917 million). Furthermore, domestic production is a combination of intermediate consumption of goods and services by all industries (R392 807 million) and gross value added, i.e. compensation of employees, gross operating surplus/mixed income and other taxes less subsidies on production (R390 841 million). The total use (R894 856 million) consists of final demand (R502 049 million) and intermediate demand (R392 807 million). The distribution of intermediate consumption and domestic final demand between goods and services is also shown.

Figure 1 – Flow of goods and services according to the 1993 supply and use tables (R million)



5. STATISTICAL SOURCES AND METHODS

The following table summarises the most important statistical sources and methods used to compile the 1993 SU-tables for each industry. Different statistical sources were used to calculate the required levels, e.g. total output, value added and intermediate consumption. The estimation of detailed output and consumption according to commodity, is briefly referred to as well.

Table 3 - Statistical sources and methods

Industry	Statistical sources and methods
Agriculture	Periodic Censuses of Agriculture conducted by Stats SA. GDP estimates compiled by the National Department of Agriculture in collaboration with Stats SA. Estimates from censuses and surveys are verified against quarterly source data collected by the National Department of Agriculture. Estimates include the value of farm produce consumed by farmers for own account. Input-output tables for Agriculture produced by the Department of Agriculture. These tables were used to determine the structure for agriculture, forestry and fishing.
Forestry	Information from the Department of Water Affairs and Forestry. Estimates of growing forests and own-account production are based on a research project conducted by the University of Pretoria.
Fishing	Information provided by the Marine Development Branch of the Department of Environmental Affairs and technical periodicals.
Mining	Information obtained from the Chamber of Mines, periodic census results published by Stats SA, as well as collections of stores consumed by individual mines. Detailed information on stores consumed was used to estimate the cost structure of the mines in addition to detailed expenditure items collected through the 1993 Census of Mining. The information from the Minerals Bureau on the sales of minerals was used to verify the output of the mines as obtained from the census.
Manufacturing	Censuses of Manufacturing conducted by Stats SA for 1993 and 1996. Information collected from the meat board/abattoirs. The 1993 Manufacturing Census was used to tabulate all structural information in the SU-tables. The level estimates were evaluated against the 1996 Manufacturing Census results and adjusted. Information received on the number of carcasses sold to abattoirs was included. Changes were made to accommodate the import of petroleum products.

Table 3 - Statistical sources and methods (continued)

Industry	Statistical sources and methods
Electricity and water	Annual statistics and financial statements obtained from ESKOM, the water boards and local authorities, as well as unpublished information from ESKOM. Historic input structures were updated from new data sources where possible.
Construction	Results from Stats SA's 1994 Census of Construction are included. Information on gross domestic fixed investment of residential and non-residential buildings compiled by the SARB. The own-construction of the general government was included in this industry, while the own-construction of all other industries is shown as ancillary production.
Wholesale, retail and motor trade	Periodic Censuses of Wholesale Trade, Commercial Agents and Allied Services; Retail Trade; and Motor Trade and Repair Services, conducted by Stats SA. The results of the above-mentioned censuses for 1993 were incorporated. The 1993 census was used to tabulate all structural information in both the supply and use tables.
Hotels and restaurants	Periodic Censuses of Catering and Accommodation Services and Licensed Restaurants, conducted by Stats SA were used. The results of the 1995 Census of Accommodation Services and the 1992 Census of Restaurants were included. Historic input structures were updated from new data sources where possible.
Transport and communication	Financial reports and unpublished information of Transnet. Private transport benchmark estimates are obtained from Censuses of Transport and Allied Services conducted by Stats SA. Information from the government garage, local authorities and individual studies, e.g. the TRANSPORTEK study on the taxi industry. Information on the output of the industry, as well as its cost structures, was used to estimate the relevant components in the SU-tables framework.

Table 3 - Statistical sources and methods (continued)

Industry	Statistical sources and methods
Financial intermediation and insurance	Annual and quarterly surveys conducted by the SARB among the various institutions in the private sector and information reported by public authorities and public corporations. Sample survey of large institutions in the banking and insurance industry. FSIM is calculated as a separate cost item for each industry in line with the recommendations of 1993 SNA. This approach differs from the previous national accounts and input-output table practice which treated these services as a negative nominal sector.
Real estate (including imputed rent on residential buildings) and business services	Censuses of Business Services and the 1996 Population Census. Historic input structures were updated from new data sources where possible.
Other private services	Censuses of Social Services. Results from the 1994 Censuses of Health were included. Historic input structures were updated from new data sources where possible.
General government services	Government Financial Statistics (GFS) and Basic Accounting System (BAS) data of Stats SA, information from SARB, and annual reports from Local Government Authorities. The intermediate consumption expenditure of the general government was derived through the classification of detailed expenditure by different government departments, provincial governments and local government authorities.
Private consumption expenditure	The household survey on Income and Expenditure of Households (1995) of Stats SA; information from the Bureau of Market Research and SARB. Expenditure patterns of households are based on different data sources as well as historical trends.
Government consumption expenditure	Government Financial Statistics (GFS) and Basic Accounting System (BAS) data published by Stats SA, information from SARB. The final consumption expenditure of general government is divided according to expenditure on collective services and individual goods and services.

Table 3 - Statistical sources and methods (concluded)

Industry	Statistical sources and methods
Gross fixed capital formation	Information contained in various economic censuses, estimates of fixed capital formation published by SARB, construction activities of the general government published by Stats SA, information on imported and exported capital goods. The gross fixed capital formation by type of product is estimated through the commodity flow approach. These results are evaluated against estimates obtained from various other models.
Changes in inventories	Information contained in various economic censuses, estimates of changes in inventories published by SARB.The changes in inventories for raw materials, work-in-progress and finished goods were estimated separately according to type of product for each industry. The valuation adjustments were not done with a price index for each product, but rather through a proportional adjustment across all industries of the total valuation adjustment received from SARB.
Imports	Detailed trade statistics from the Department of Customs and Excise and information from SARB. Detailed information on imports was reclassified from the Harmonised Commodity Classification System to the level of detail required in the SU-tables. The adjustment of c.i.f. and f.o.b. was based on information from both sources.
Exports	Detailed trade statistics from the Department of Customs and Excise and information from SARB. Detailed information on exports was reclassified from the Harmonised Commodity Classification System to the level of detail required in the SU-tables.
Taxes and subsidies on production and imports	Information contained in various economic censuses, Auditor-General reports, the South African National Budget, the Economic and Functional Classification of the Expenditure of General Government and the Department of Trade and Industry.
Trade and transport margins	Periodic Censuses of Wholesale Trade, Commercial Agents and Allied Services; Retail Trade; Motor Trade and Repair Services; and Transport and Allied Services published by Stats SA, as well as information obtained from Transnet.
Direct purchases abroad (in domestic market) by (non-) residents.	Unpublished information from SARB.

6. CONSEQUENCES OF THE IMPLEMENTATION PROCESS

A. SU-tables as a tool to balance the national accounts

a) Introduction

The SU-tables are intended to include all the transactions in goods and services in the South African economy for a specific year in a matrix format. They allow for close examination of the consistency of the national accounts by linking and integrating the various components within a single framework.

b) Goods and services account

The goods and services account (Table 4, page 23) shows, for the total economy of South Africa for 1993, how the total amount of products available (resources) is equal to the total amount used. Resources are shown on the left-hand side and uses are shown on the right-hand side of the goods and services account.

Table 4 - Goods and services account: 1993

Resources	R million	Uses	R million
Output	**783 648**	**Intermediate consumption**	**392 807**
Taxes on products	**41 611**	**Final consumption expenditure**	**350 943**
Subsidies on products	**(6 320)**	Private consumption expenditure	265 392
Imports of goods and services	**75 917**	Government consumption expenditure	85 551
		Gross capital formation	**65 206**
		Gross fixed capital formation	62 603
		Changes in inventories	2 603
		Exports of goods and services	**91 578**
		Residual item	**(5 678)**
Total resources	**894 856**	**Total uses**	**894 856**

Sources: SARB: Supplement to the South African Reserve Bank - Quarterly Bulletin, June 1999
Stats SA: Statistical Release P0441 Gross Domestic Product – Revised estimates 1993 - 1998, First quarter 1999, 22 June 1999

c) Discrepancy between production and expenditure

Complete integration between the 1993 SU-tables and the national accounts was not yet possible. Stats SA and the SARB share the responsibility for the compilation of national accounts. Stats SA compile national accounts from the production side, while the SARB compile national accounts from the expenditure side.

The goods and services account (Table 4, page 23) shows a discrepancy (residual) between total resources and total uses of R5 678 million. This discrepancy between production and expenditure as published by the SARB corresponds with the total discrepancy in the published SU-tables.

While it was possible to completely reconcile the 1993 SU-tables with the national accounts estimates of GDP by activity and the expenditure on GDP, there were still significant discrepancies between the supply and use of products at a more detailed level. These discrepancies in respect of products were published in the 1993 SU-tables with the aim of revealing the shortcomings in the data sources in order to investigate and rectify them for future publications.

At a workshop on South Africa's national accounts, a United Nations Statistics Division (UNSD) representative recommended that in future the statistical role of the SU-tables be enhanced to serve as an important instrument for the elimination of the present discrepancies between the production and expenditure approaches.

d) Process to rectify discrepancies

As mentioned above, Stats SA and SARB share the responsibility for compiling South Africa's national accounts. The 1993 SNA was implemented with the co-operation between Stats SA and SARB. As Stats SA is mainly responsible for estimating South Africa's GDP from the production side and SARB for estimating South Africa's GDP from the expenditure side, discrepancies occur between the two approaches.

With the compilation of the 1998 SU-tables, discussions started between Stats SA and SARB to rectify the discrepancies between the supply and use of products at a detailed level. The discussions concentrated on how to address all the problem areas in the 1998 SU-tables, and how data sources can be improve to deal with the problem areas for future publications.

The discrepancies in the 1993 SU-tables publication were all between 50 and 80 percent of the total supply of products. The aim was to reduce the discrepancies between the supply and use of products to at most ten percent of total supply in the next SU-tables publication.

To identify all the problem areas, all the discrepancies were reduced to ten percent of total supply of products. In the areas where data sources are reliable, the data were taken as given. The discussions concentrated on the remaining areas to identify possible classification or distribution problems. After rectifying these problems, there remained mainly three problem areas, namely food products, beverages and furniture. The causes of these three problem areas were due to a lack of reliable source data, especially data related to final consumption. After the data in these three problem areas were recalculated on the available data sources, the discrepancies of these products could only be reduced to twenty percent of total supply of products.

As SU-tables cover the entire economy, the discussions between Stats SA and SARB will be on a continuous basis to identify problem areas and to improve the quality and consistency of data sources in these problem areas.

B. The effect on the collection and sources of basic data

a) Introduction

The compilation of SU-tables places a heavy burden on source data as discussed below. The SU-tables cover the entire economy. It is, however, the aim of Stats SA not only to reduce the time lag between the publication of SU-tables and the reference year, but also to improve the quality and consistency of the various data sources.

b) Statistical and analytical functions

The SU-tables, often regarded as the cornerstone of the 1993 SNA, have both statistical and analytical functions.

As a statistical tool the SU-tables provide a co-ordinating framework for checking the consistency of economic statistics on flows of goods and services obtained from quite different kinds of statistical sources, i.e. industrial surveys, household expenditure surveys, investment surveys, foreign trade statistics. Furthermore, the SU-tables serve as a basis for calculating the economic data contained in the national accounts and to detect weaknesses in the economic data.

As an analytical tool, the SU-tables are conveniently integrated into macroeconomic models in order to analyse the link and interaction between final demand and industrial output levels. This type of analysis, which is also known as impact analysis, enable users at universities and research institutions to use the tables for sophisticated analysis, including market and productivity analysis.

c) Collection and sources of basic data

Stats SA will in future compile and publish final SU-tables on an annual basis and users will then be able to monitor changes over time. The SU-tables of South Africa distinguish between 94 different industries and product groups as well as six different components of final demand.

The most appropriate way to ensure complete integration with the national accounts the annual estimates of gross value added and its components, as well as output, intermediate consumption expenditure, final consumption expenditure and GDP will therefore all have their origin in the annual SU-tables.

To accomplish this goal, Stats SA will have to improve, on a continuous basis, the quality and consistency of data sources. A few thoughts on data source improvement:

- Stats SA uses input-output tables for agriculture, which are compiled by the Department of Agriculture, to determine the structure of agriculture. To improve the SU-tables these input-output tables will have to be compiled in more detail.
- The annual Economy Activity Survey was changed to help improve the classification and distribution of data for the SU-tables.
- The government is in the process of developing Vulindlela, which is a system that will improve the access to data on the government sector on a monthly basis.
- Important examples of new data sources for compiling the 1998 SU-tables are the 1996 Census of Mining, 1996 Census of Manufacturing and the 1996 Population Census.

C. Decreasing the time-gap between publication and reference year

Stats SA published the 1993 SU-tables for South Africa in November 1999. These were the first official SU-tables published by Stats SA and it were compiled according to the recommendations of the 1993 SNA.

The time-gap between the 1993 SU-tables publication date and the reference year was six years. Users of such tables will be aware that, internationally, three years and more is the usual period since reference date for the publication of final SU-tables.

Stats SA will in future compile and publish annual SU-tables, so users will be able to monitor changes over time. The aim of Stats SA is to reduce the time-gap between the publication of SU-tables and the reference year to two years. The next SU-tables publication will be for the reference year 1998 and it will be published by Stats SA at the end of 2000.

7. FUTURE OF SOUTH AFRICAN SUPPLY AND USE TABLES

A. Introduction

The next SU-tables for South Africa will be published by Stats SA at the end of 2000 for the 1998 reference year. The 1998 SU-tables will be published in the same format as the 1993 SU-tables. Stats SA also plans to compile and publish annual SU-tables from 1998 onwards.

B. Future developments

As already stated, the compilation of SU-tables places a heavy burden on source data. It is, however, the aim of Stats SA not only to reduce the time lag between the publication of SU-tables and the reference year, but also to improve the quality and consistency of the various data sources.

In future there will be more data sources available that will improve the quality of SU-tables. Stats SA plans a revised annual Economy Activity Survey that will not only help with the reducing of the time lag, but also to improve the classification and distribution of data. The government is also in the process of developing a new system that will improve the access to data on the government sector.

The current SU-tables of South Africa comprise of 94 industries and 95 commodities. Given the available resources, Stats SA plans to increase the commodities to 200 in future SU-tables. Agriculture will be one of the main focus points when the commodities are increased.

Stats SA is already in the process of planning the compilation of a new Social Accounting Matrix (SAM). The SAM will be published by Stats SA in 2002 for the reference year 1998.

8. CONCLUSION

The publication of the 1993 SU-tables of South Africa formed part of the implementation of the 1993 SNA. This was Stats SA first publication of SU-tables and will in future compile and publish SU-tables annually.

Users of such tables will be aware that, internationally, three years and more is the usual period since reference date for the publication of final SU-tables. In future Stats SA plans to publish SU-tables two years after the reference year. In order to accomplish this goal the quality and consistency of the various data source will have to improve on an continues basis. The next SU-tables for South Africa will be for 1998 and the planned date for publication is at the end of 2000.

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